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STRUCTURES

EQUIPMENT **ECONOMIES**

Annual

number

How much more equipment?

p. 38

Handling long welded rails

p. 40

PRR's formula for **B&B** efficiency

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p. 52

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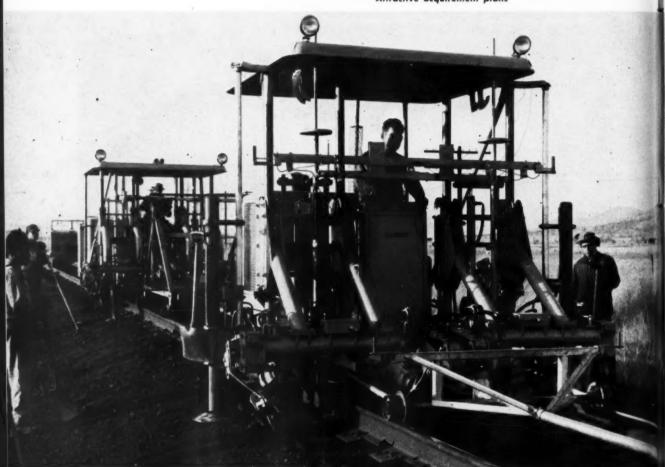
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RAILWAY TRACK and STRUCTURES

STRUCTURES MARCH

1960 • Vol. 56, No. 3

Standardization 35 Our guest editor, President Frank R. Woolford of the AREA, expresses his thoughts on a subject that's getting a lot of attention today. AREA program 36 Gives a complete schedule of all activities, including committee and other meetings, planned during the annual convention at Chicago. How much more work equipment? 38 Reports the thinking of a cross section of maintenance officers on future needs for M/W machines, including additional types. Handling long welded rails in the field 40 Discusses the procedures and equipment in current use and points out variations in practice between different roads. PRR's formula for B&B efficiency 43

Tells how this road is utilizing new machines and smaller gang units to speed up B&B work. Result: More maintenance work accomplished. 47 Track panels: Up—and down How the NYC is effecting substantial economies in constructing new yard by using panels taken up from abandoned main-line trackage.

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■ Don't miss . . .

Here's one way of replacing a deck-truss span with minimum interference with trains. In reconstructing a 247-ft bridge across the Snake river in Idaho the Union Pacific erected the new structure around the old one.

... in the April issue



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raised enough to free the old tie, the W90 removes ties quickly and efficiently. Used with the Fairmont W87 Tie Bed Scarifier, and minus its boom, the W90 inserts ties rapidly and economically.

Operated by two men, the W90 has pneumatic set-off wheels and extension lift handles. Hydraulic power gives a smooth, steady pull that can be accurately controlled. Self-propelled, it has a low center of gravity and ample power for efficient operation. Why not equip all your tie gangs with Fairmont W90 Series A Tie Handlers. Call or write us today for full information.





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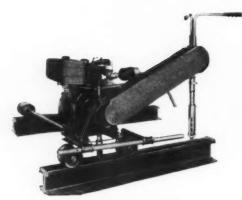
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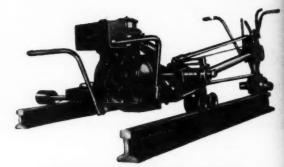
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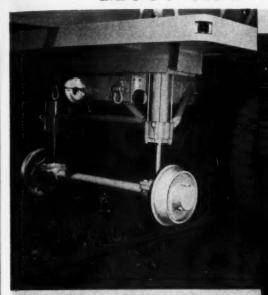
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Meet the "Rail Rover"...a multipurpose tool for all railroad utility work. The Truco Turret Derrick with its Railroad Conversion Unit now operates on rails to speed maintenance on track structures, lifting, installing, repairing brush cutting and painting. It is actually a powerful 7½-ton turret derrick, an aerial lift with operating heights to 100' and a rugged hydraulic digger with 30" full-flight auger...all in one compact, truck-mounted tool.

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STRUCTURES NEWS ABOUT PEOPLE

ALASKA-George E. Alford, track supervisor at Anchorage, Alaska, has been promoted to acting roadmaster there.

BALTIMORE & OHIO—Alva E. Higley, track supervisor at Chillicothe, Ohio, retired recently after nearly 42 years of service.

CANADIAN NATIONAL-C. H. Wood, assistant roadmaster at Oshawa, Ont., has been promoted to roadmaster at Nakina, Ont., succeeding V. Swanson who has been transferred to Allandale, Ont. Mr. Swanson succeeds S. A. D. Henderson who has retired after 38 years of service. J. O. Lovesque, roadmaster at Cornwall, Ont., retired recently after 38 years of service. W. S. Dewer, assistant roadmaster at New Glasgow, N.S., retired recently after 36 years of service.

Marshall J. Nickerson, terminal construction engineer at Moncton, N. B., has been promoted to engineer of construction, Atlantic Region, succeeding Robert K. DeLong,

CENTRAL OF GEORGIA-L. E. Bowers, track supervisor at Opelika, Ala., retired recently after 47 years of service.

CHESAPEAKE & OHIO-John W. Schnarre has been appointed assistant cost engineer at Russell, Ky.

ELGIN, JOLIET & EASTERN - Joseph P. Schramm, supervisor track at Gary, Ind., has been transferred to the Mill Yard there, succeeding Charles E. McEntee who has been promoted to roadmaster at Joliet, Ill. Mr. McEntee succeeds Howard W. Lane who has been promoted to the new position of supervisor-materials, records and standards at Joliet.

FRISCO - D. C. Gement, assistant roadmaster at Amory, Miss., has been promoted to roadmaster there, succeeding H. W. Cooper who has been transferred to Okmulgee, Okla. E. M. Cheatham, roadmaster at Sapulpa, Okla., retired recently after more than 48 years of service.

GRAND TRUNK WESTERN-R. C. Kerr, bridge and building supervisor at Durand, Mich., retired recently.

LOUISVILLE & NASHVILLE-Hugh B. Lewis, assistant division engineer at Mobile, Ala., has been promoted to division engineer at Chattanooga, Tenn., succeeding D. W. Burns whose death was announced in the January

NEW HAVEN-frederick J. Orner, general manager of freight service at New Haven, Conn., has been promoted to chief of operations, with jurisdiction over operations, maintenance of way and equipment, labor relations and personnel, freight and passenger traffic, and purchases and stores.

NEW YORK CENTRAL-L. F. Schrader, supervisor maintenance of equipment at Cleveland, Ohio, has been promoted to district methods engineer there, succeeding R. O. Beers who has been promoted to assistant division engineer, also at Cleveland.

NORFOLK & WESTERN-William H. Yost, Jr., assistant roadmaster at Crewe. Va., has been promoted to roadmaster at Bluefield, W. Va., succeeding Josse J. Kendrick, Jr., who has been promoted to assistant superintendent at Roanoke, Va.

NORTHERN PACIFIC-H. E. Moore, assistant engineer of track, has been appointed assistant district engineer at St. Paul, Minn., succeeding R. G. Brohaugh who has been appointed office engineer there. Mr. Brohaugh succeeds R. E. Nichols who has been promoted to principal assistant engineer, also at St. Paul, succeeding J. D. Worthing, resigned. C. E. Akidakis, assistant engineer. at St. Paul, and A. W. Hegland, transitman at Missoula, Mont., have been promoted to assistant engineers of track at St. Paul.

NORTH WESTERN—D. B. Carlisle, instrumentman at Milwaukee, Wis., has been promoted to assistant roadmaster at Chicago, succeeding R. J. Christensen who has been transferred to Worthington, Minn. Mr. Christensen succeeds L. B. Lenzon who has been promoted to roadmaster at Tracy, Minn., succeeding G. A. Fox who has in turn been transferred to Brookings, S. D. Mr. Fox succeeds R. C. Smith whose death was announced in the February issue.

PENNSYLVANIA - The following changes have occurred recently: E. T. Lurcott to supervisor structures at Columbus, Ohio; A. B. Baker to assistant supervisor structures at Pittsburgh, Pa.; and E. E. Robertson to assistant supervisor track at Newport, Pa. T. L. Ray, supervisor track at Oil City, Pa., has been transferred to Terre Haute, Ind., succeeding R. L. Stevens who has been promoted to assistant trainmaster-supervisor track at Decatur, Ill.

William Glavin, district engineer at Harrington. Del., has been transferred to Chi-

ROCK ISLAND-Paul E. Bierman, assistant engineer at Chicago, has been promoted to assistant to engineer capital expenditures there, succeeding R. D. Igou whose promotion to engineer capital expenditures was announced in the February issue.

SOUTHERN-Rush A. Kelso has been appointed division engineer of the Alabama Great Southern, Woodstock & Blocton, New Orleans & Northeastern and New Orleans Terminal, all subsidiaries of the Southern, with headquarters at Birming-

SOUTHERN PACIFIC-G. B. Stidd and H. T. Brown have been appointed assistant water and fuel supervisor and assistant supervisor of automotive and work equipment, respectively, at Sacramento, Calif.

WESTERN PACIFIC-F. C. Reith, track supervisor at Elko, Nev., has been promoted to assistant roadmaster at Oakland, Cal., succeeding J. H. Jones who has been transferred to Keddie, Cal. Mr. Jones succeeds M. K. Anderson who has been promoted to assistant division engineer at Elko, succeeding Arthur P. Schmitt, deceased. A. M. Overturf has been appointed track supe visor at Sacramento, Cal., succeeding 1. A Morritt who has been promoted to assi roadmaster at Elko.

J. G. Howard has been appointed assistan bridge and building supervisor at Sacra mento, succeeding R. C. Cox who has her promoted to assistant general supervise, bridges and structures, at San Francis Cal. C. A. Moser has been appointed bride and building supervisor at Sacramento.

Obituary

James T. McGuire, supervisor water up ply on the Chesapeake & Ohio at Covin ton, Ky., died recently at the age of 57,

Biographical Briefs

Thomas K. Dyer, 38, who was recent promoted to chief engineer of the Boston & Maine at Boston, Mass. (RT&S, Dec.,) 10), was born at Medford, Mass., a graduated from the Massachusetts Institute of Technology in 1943 with a Bachelor of Science degree in civil engineering. Mr. Dver entered the service of the B&M in March 1946 as a draftsman at Boston. His subsequent service was all at that location and included the following promotions: To structural designer in November 1946, proect engineer in 1949, assistant structun engineer in 1950, acting assistant division engineer in 1953 and division engineer the following year. Mr. Dyer was appointed acting assistant to chief engineer in 1955 and engineer maintenance of way the fallowing year. He was holding the latter position at the time of his recent promotion.

Joseph J. Eash, 44, who was recently promoted to assistant chief engineer of the Pittsburgh & Lake Erie at Pittsburgh, h (RT&S, Dec., p. 10), was born at Holsopple, Pa., and graduated from the Carnegie Institute of Technology in 1944 with a Bachelor of Science degree. Mr. Essi entered the service of the P&LE in 1941 & an electrical inspector, being promoted to electrical foreman the following year. Sub-

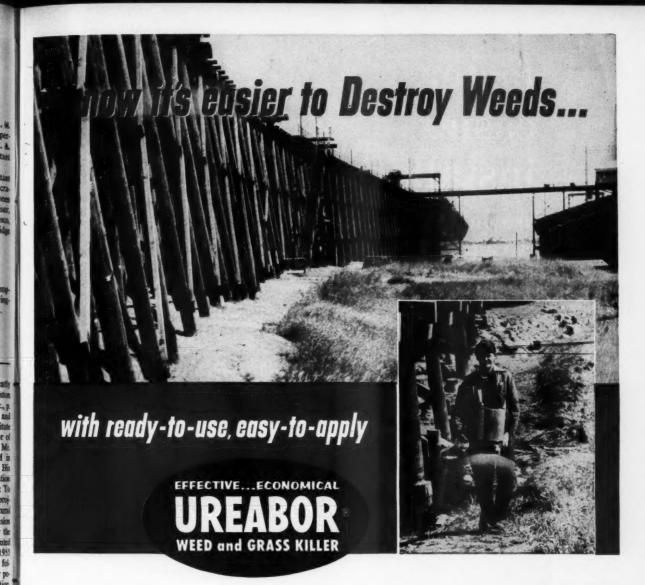
(Continued on page 90)



Thomas K. Dyer



Joseph J. Eash PALE





Here's your thriftier, easier way to stop weeds! Look in that hand and you'll see enough UREABOR to kill vegetation in a 12 sq. ft. area! Consider the convenience and economy this can mean to you.

Consider, too, that a UREABOR "kill" remains effective for a season or longer. And UREABOR has important safety features; it is nonflammable, nonpoisonous when used as directed, and does not corrode ferrous metals. Protect your timber structures, yards and buildings from fire-hazardous weeds by applying UREABOR weed killer now...it's easier to apply!

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12

STRUCTURES NEWS NOTES ...

. . a resume of current events throughout the railroad world

President Eisenhower thinks there should be "a real overhaul of all regulation and controls" so the railroads would have "a chance to be prosperous." Mr. Eisenhower stated he thinks the railroads "are governed by antiquated laws and regulations," although "some of the trouble is their own." He said his "transportation committee remains alive." Presumably, he was referring to a transportation study made by the Department of Commerce, which is understood to be at the White House. However, further processing is necessary in the way of checking its recommendations with various other interested government agencies.

The railroads' share of the national income in 1958 was relatively only half of what it was in 1939—2.7 per cent compared with 5.7 per cent. These are ratios of gross revenue to national income. The airlines' share, during the same 12-year period, rose from 0.1 to 0.4 per cent. The truckers' share rose from 1.1 to 1.7 per cent, and the bus lines' share remained at 0.2 per cent.

An AAR estimate puts net income of Class I railroads last year at \$574 million, a decrease of \$29 million from the 1958 net of \$603 million. The rate of return averaged 2.72 per cent for 1959. The AAR statement also showed December estimated net income at \$90 million.

Threat of a rail strike faded measurably last month as the railroads and the Brotherhood of Locomotive Engineers agreed to submit their wage dispute to binding arbitration. Immediate effect of the move was the cancellation of a strike ballot which the BLE planned to spread. Until it accepted the National Mediation Board's proffer of arbitration, the union, along with two other brotherhoods, had been poised to throw the dispute into "emergency" status. As a result of the arbitration plan the other two brotherhoods are backing away from any attempt to tie their wage cases to the BLE dispute. The BLF&E, for one, contends that its case involves different issues—a higher wage hike and improvement in the cost-of-living escalator clause.

Hertz Corporation is moving into the equipment-leasing field with a program which will stress leasing of such equipment as over-the-road trailers, interchangeable containers, mobile fork lifts and bulldozers. Purchase and lease-back arrangements will be part of the service.

Hospitalization benefits for retired railroaders will be sought by the Railway Labor Executives' Association. RLEA will undertake to have them covered in pending legislation which proposes similar benefits for persons covered by the general Social Security system. The proposed legislation would finance the new benefits by adding 0.5 per cent to the Social Security tax. Presumably, the RLEA proposal would call for a like increase in railroad retirement taxes.

ANOTHER FIRST IN SERVICET

106

First in Design and NOW...

During the early 1950's the American Railroad Industry was actively interested in obtaining rail in 78-foot lengths in place of the long standing 39-foot standard. CF&I's investigation toward this end provided little encouragement in complying with the railroads' request due to the tremendous expenditure necessary to change existing production facilities. In short, at the time and until today, 78-foot rail was not economically feasible.

Now, CF&I has cooperated with the National Cylinder Gas, Division of Chemetron Corporation, in leasing land to NCG contiguous to the CF&I Pueblo Mill, and making possible an association of services to produce for Western Railroads 78-foot rail or welded strings of any specified length.

Establishment of the Electric Flash Butt Resistance Welding Plant adja-

cent to The Colorado Fuel and Iron Corporation Mill early in 1960 will enable complete fulfillment of any systems welded rail requirements — an important and long awaited achievement in providing material and services to the Railroad Industry in keeping with our confidence in the progressive future of American Railroads.

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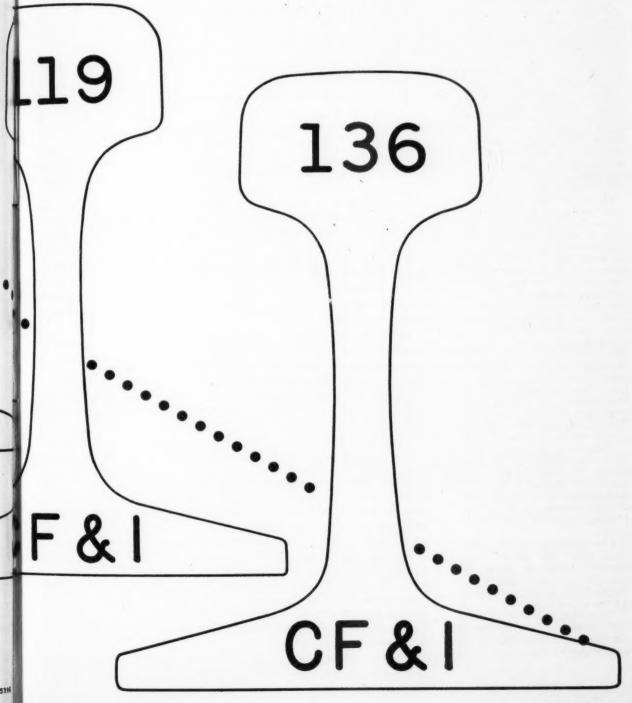
DENVER, COLORADO

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MARCH. 1960

RAILWAY TRACK and STRUCTURE

ETHROUGH COOPERATION



RAILWAY TRACK and STRUCTURES

MARCH, 1960

15

On redesigning machines

Railroad men are demanding more and more from machines. First of all, a unit must reduce the number of men required to do a job. Also, the work of the unit must be as good or better than the existing method or unit.

When viewing a demonstration of a new machine, some railroad men can see the possibility of increased output or versatility if certain alterations or improvements are made. They ask that such changes be made. It is here that a bone of contention may develop between user and supplier.

On the one hand the manufacturer has already invested heavily in the development of his machine. It was designed to do a certain job which his market survey has shown will fill a railroad need. Reluctance to redesign and revamp his unit for increasing its versatility while the primary need goes unfilled is understandable.

On the other hand, railroad men know that they must keep changing their methods to get their work done in the face of rising wages and prices. This boils down to more output at less unit cost. They need machines to do this-units which will do more work than the ones they have. They believe that their suggested changes will accomplish this end.

These men might ask themselves this question: Are there enough other railroad users who would work the unit in the way I have in mind to warrant the manufacturer making the change? Am I willing to pay the difference in price?

The supplier, on the other hand, might ask himself these questions: Does the suggestion have merit? Have I looked into the possibility of how many more machines I could sell?

An earnest endeavor on both sides to answer these questions will certainly help in arriving at a meeting of minds.

Progress in M/W-A matter of attitude

In dealing with cost problems railway maintenance officers have their choice of one or the other of these two basic attitudes:

- (1) To continue using present practices until forced by reduced allotments to introduce improved methods and equipment, or
- (2) To take the initiative in developing or seeking out more efficient and economical practices with the objective of keeping maintenance costs to a minimum.

There was a time when a great many maintenance officers could be classified in the first category. In those days "economy" was achieved as a rule merely by reducing the amount of work done. Behind this reasoning was the comfortable notion that the need for retrenchment was temporary, that business would soon pick up again and that any deferred maintenance incurred this year will be made up in the more prosperous years ahead. Therefore (so it was reasoned), why go to the trouble of finding more economical ways of doing things?

Events proved there was a glaring flaw in this attitude. That flaw was the failure to allow for the possibility that basic conditions could change in such a way as to create a permanent squeeze on maintenance allotments. Due primarily to competition and rising wage rates this possibility has now become a

The result was a revolution in the thinking of maintenance men. They found that adherence to the first attitude mentioned above had become completely unrealistic, that the only logical and practical approach under the new order was to introduce true efficiency into maintenance work. And then to keep striving for even greater efficiency. In other words, just as wage inflation had apparently become a built-in feature of the economy so has the need for cost reduction become a permanent goal of the M/W officer.

Maintenance men who have developed this attitude to a high degree are known to many readers. One such man was a chief engineer, now retired, of a medium-sized road. One of the first to recognize the existence of the new order, he began, without any urging from management, to anticipate wage increases and to introduce cost-cutting practices designed to offset them. With him this objective became almost a personal crusade. Not only did he get results (some of the innovations developed under his direction have since been widely adopted by other roads) but he won the complete confidence of his management.

This man, and others like him, were pioneers in establishing a new approach to railroad maintenance. This new approach was achieved by discarding one basic concept and replacing it with another. The concept discarded might be stated this way: "I'll take as much from management as I can get to maintain the property." The one that replaced it could be phrased this way: "By introducing cost-saving measures I'll be able to keep my budget request down to such-and-such a figure this year."

It is dedication to this latter principle that is behind the progress in M/W practices so apparent today. Only continued dedication to it will assure equal progress in the future.



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MECO RAIL AND FLANGE LUBRICATORS

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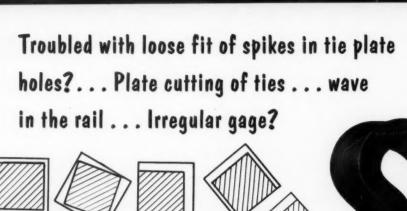
double to quadruple life of curved rails and locomotive wheel flanges. Available for single and double rail installations, main lines, yards, industrial tracks, running rails and quard rails.

MACK REVERSIBLE SWITCH POINT PROTECTOR

Prolongs the life of switch points about 4 times; then is reversed and again extends the switch point life for another similar period.

. BRUSH CUTTER

Cuts right-of-way maintenance costs. One operator with the new, light-weight, Southworth can do the work of eight men using brush hooks or scythes. Extreme maneuverability, "work horse" power, light-weight are important advantages.



The common 5%" square shank cut spike may take any one of the various positions shown in cross-section at the line spike holes of the tie plate, which are scattered about this page. A reduction in size of the holes will not correct this trouble, as exhaustive tests of cut spikes in the smaller 11/16" square lag holes have proved.

Only LOCK SPIKES completely fill the holes by compression of the spread shank-firmly holding the plates to the ties under spring tension. Plate cutting is overcome-Rail is held to gage and line.

Rail Lock Spikes and Gage Lock Spikes are rail spikes as well as plate fastenings. Rail Lock Spikes also take up the play between the width of the rail base and the tie plate shoulders. The slight protrusion on the spike head at the tie plate surface binds against the edge of the rail base and forces the opposite shoulder into contact with the rail base. This action slightly skews the tie plates, as shown in the illustration below, and binds the rail at all four corners of the plate shoulders, as indicated by the arrows. Complete elimination of play in the spike holes of a tie plate and between the shoulders is accomplished.



TIE PLATE LOCK SPIKE

BERNUTH, LEMBCKE CO., INC.

RAIL LOCK SPIKE

420 Lexington Avenue New York 17, N. Y.

RAILWAY TRACK and STRUCTURE

GAGE

LOCK SPIKE

New Haven Reduces Bridge Painting Time and Costs...by 60%



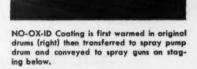
The Poughkeepsie Bridge, vital connecting link to the New York, New Haven and Hartford's western freight terminal at Maybrook, N. Y., is a mammoth 6800-foot maintenance job. The gigantic steel structure, built in 1870, spans the Hudson River 220 feet above water level.

Before 1959, painting and maintenance was a full time problem. It required a crew of 18 to 20 men, working the entire season, three full years to paint only one-half the bridge (3400 feet)—cost: approximately \$100,000 in labor, and \$14,000 in material, not including scaffolding.

Working with representatives of Dearborn Chemical Company, H. W. Jenkins, Chief Engineer of the New Haven, developed a NO-OX-ID* bridge spraying program which enabled only 12 men to coat over 2000 feet of the bridge in 50 working days. The estimated total labor cost for the entire 3400-toot section is \$22,000—materials cost approximately \$14,000—a saving of more than 60%—and the special equipment purchased for this operation (spray guns and pump, "Spider" staging, compressor accessories), totaling \$31,000, is expected to give at least 10 to 12 more years of service.

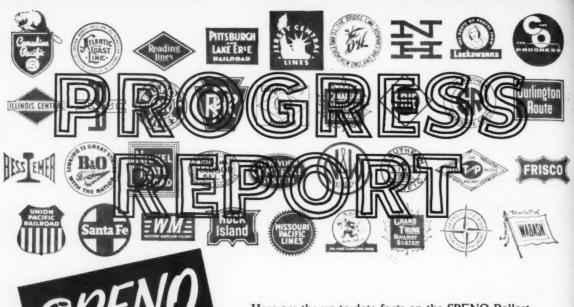
One big factor in these savings is the minor surface preparation required. Crews simply scrape the scale and curled paints with a chisel-edged scraper attached to a powerful air nozzle, which blows away the rust and dirt as it is removed. Without moving the scaffolding, a single coat of NO-OX-ID is immediately sprayed on even over badly rusted areas. The result is a black finish which protects indefinitely and eliminates further "out-of-face" painting. The NO-OX-ID coating will loosen badly rusted areas, causing the scale to fall off. Future maintenance crews will need only to spot coat the exposed areas.

For detailed information on this bridge and the NO-OX-ID bridge spraying programs of other major railroads, write — Dearborn Chemical Company, Merchandise Mart, Chicago 54, Illinois





Chisel-edged cleaning tool with air hose attachment made by New Haven maintenance department, cleans and removes loose scale and dirt in one operation. Eliminates costly hand and power chipping hammers.



SPENO

Here are the up-to-date facts on the SPENO Ballast Cleaning and the SPENO Rail Grinding Services.

BALLAST CLEANING

SPENO Engineering and Research has developed a superior screening arrangement so that we are now using an improved Ballast Cleaner with greater efficiency.

RAIL GRINDING

Our Rail Grinding Service has been so well received we are now building a *THIRD* Rail Grinding Train to take care of the increased demand.

SPENO is constantly developing means for better service to make sure that the Railroads receive everything they pay for — and more



Just Ask the Railroads That have used us!



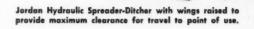
FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.

Clark Street East Syracuse, N. Y. 306 North Cayuga St. Ithaca, N. Y. "Life of rail on high side of curve has been extended up to 300%." "Outside rail on curves, formerly changed every two years, now transposed only when low rails become corrugated and flattened." "Less gauging due to rail wear, saving labor and ties." Talk about big savings with Racor "Canting of rail on curves has been reduced." Lubricators! These are typical results obtained by using Racor®rail lubricators. For savings like this on 'Significant reduction of wear on your road consult your Brake switch points, frogs, and special trackwork." Shoe representative. "Without track lubrication, leading wheels of diesels required turning for flange wear at 20,000 miles." RAILROAD PRODUCTS DIVISION 530 FIFTH AVENUE . NEW YORK 36, N. Y. "250% increase in wheel life." "Lowest maintenance cost." "Best control of grease flow." Racor units lubricate up to 360° included angle of curve within ten miles of track. Additional capacity is obtained in multiple installations. Models available for both jointed and welded rail.

MODERN...VERSATILE...ECONOMICAL JORDAN HYDRAULIC



Jordan Hydraulic Ditcher-Spreader in operation, with wings lowered.



BETTER PERFORMANCE — A hydraulic control system, combining the achievements of Jordan research with more than sixty years' experience in manufacturing railway equipment, provides unequalled performance. Hydraulic power assures: smooth, positive operation; accurate positioning; faster operation; more work-capacity; safety.

INCREASED VERSATILITY — The Jordan Hydraulic Spreader-Ditcher has year-around usefulness for all types of right-of-way improvement and maintenance operations, including spreading; ditching; building up embankments; ballasting; snow plowing; and moving industrial material such as steel mill slag on dump lines.

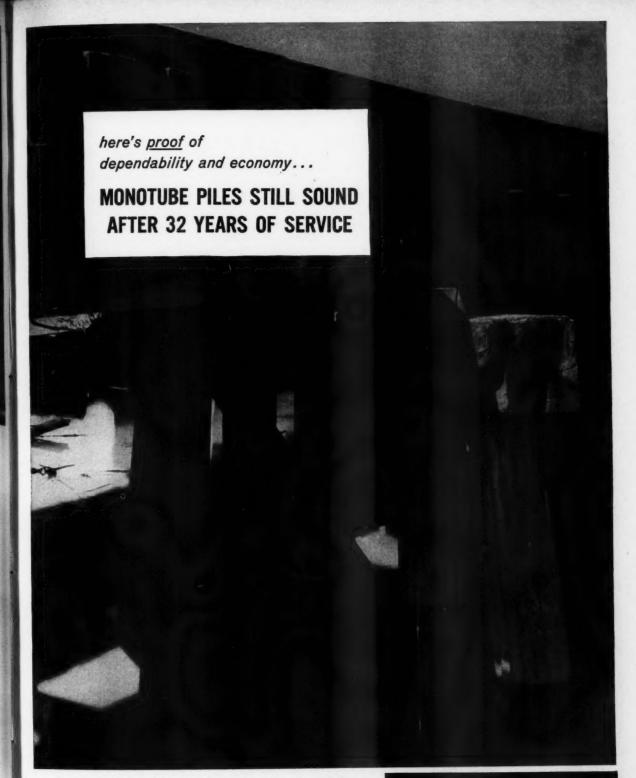
COSTS LESS-The Jordan Hydraulic Spreader-Ditcher costs less than other equipment designed for the same purpose because it accomplishes more in a given period of time. Sturdy construction assures continuous, uninterrupted work output. Wide versatility makes possible substantial savings in time and man-power in all types of maintenance operations the year 'round.

Write or call today for free brochure describing the many unique, exclusive features of the Jordan Hydraulic Spreader-Ditcher. We also will be pleased to arrange for a demonstration at your convenience.

O. F. JORDAN COMPANY

WALTER J. RILEY, Chairman of the Board EAST CHICAGO, INDIANA





In 1928 the first steel Monotube foundation piles were installed on one complete bent of a Wheeling and Lake Erie Railroad trestle bridge. A recent inspection proved the installation to be in excellent condition . . . ready for many more years of service.

Tapered, fluted Monotube steel piles are available in lengths, diameters and gauges to meet every requirement. The Union Metal Manufacturing Co., Canton 5, Ohio; Brampton, Ontario, Canada.

UNION METAL

Monotube Foundation Piles

BANTAM RAIL-ROADER.

... the most versatile, multi-purpose machine you can own

CUTS COSTS ON TRACK AND OFF

The carrier mounted BANTAM Rail-Roader brings new ideas to railroads . . . and the opportunity for real savings on all kinds of right-of-way maintenance, building work, and yard assignments.

This modern crane-excavator is letter-perfect for your needs. It travels quickly anywhere there is work to be done—on track or off. BANTAM's exclusive and simplified retract-

able dolly wheel design provides easy drive-on at any rail crossing—to put you in position to handle heavy lifts up to eight tons for stepped-up work speeds on such jobs as redecking, bridge-restringing, cap changes, and handling and positioning ribbon-rail sections.

Only BANTAM offers you integrated design with foolproof rail-wheel operation in a rugged, rubber-tired 6 x 6 carrier that's BANTAM-built for this work. BANTAM's simplified mechanical controls are the easiest acting, most maintenance-free in the industry . . . give fast, safe control of BANTAM's high-speed work cycle. For one-man operation of both crane and carrier, you can have BANTAM's optional low-cost remote control.

More and more railroads are buying the BANTAM Rail-Roader and making immediate important savings. See how you can, too. Ask for the name of your BANTAM Rail-Roader Distributor and new literature.



Rail-Roader updates ribbon-rail setting

The carrier mounted BANTAM Rail-Roader lays 1400-foot sections of main-line rail in record time. The Rail-Roader, with its unique Rail Threader (patent pending) mounted on the rear outrigger (below), makes the threading-in of ribbon-rail between existing tracks a faster, of ribbon-rail between existing tracks a faster, of ribbon-rail between existing tracks a faster, operation. Then, with the old rail smoother operation. Then, with the new ribbon-rail to gauge in one operation—quickly safely!



Rail-Roader speeds bridge work

BANTAM's rapid rail travel (special highspeed reversing transmission gives same speeds forward and reverse) gets it to jobs faster down the track or over the highway. Accurate, safe boom and hoist control plus fast 360° swing hastens such assignments as restringing, redecking, changing caps. For off-track work, dolly wheels are fully retractable, giving you



RA





Another BANTAM exclusive design feature, this BANTAM Rail Threader (Pat. Pending) mounted on rear outrigger works with second threader carried by hoist line to place rail on roadbed. BANTAM Rail-Roader is the complete railroad man's rig capable of doing more jobs in shorter time. This expands work schedules . . . cuts operating costs.

BANTAM work range is virtually unlimited through 11 easy-change BANTAMbuilt attachments. This one basic tool does pile-driving, excavating, loading and unloading, erecting, scrap-handling, ditching, stockpiling, materials-handling. Furthermore, you can profit from efficient stores-handling operations. BANTAM Rail-Roader also available as self-propelled model. One-engine, one-man operation with full 11-ton lifting capacity. Travels and works on or off track. Special reverse transmission gives speeds up to 12 m.p.h. in either direction.

NEW FILM—see BANTAM in action: Arrange a personal showing of new color motion pictures showing BANTAM's amazing job speed and versatility for B&B or track departments.

NEW BULLETIN—new, illustrated 2-color bulletin has full information, specifications and application photos. Write for Catalog RR-200.



284 Park Street, Waverly, Iowa

World's Largest Producer of Truck Crane-Excavators.

RT-258

PROOF...after PROOF



1. DRY WOOD

This 60-year-old tie, removed from a covered railroad bridge, is as sound today as when it was installed. Bird Self-Sealing Tie Pads give the same protection against moisture and abrasive materials.

2. SMALLER TIE PLATES

These are 7" x 10" tie plates with Bird Self-Sealing Tie Pads. Pads were installed under existing plates in preference to buying larger tie plates.

3. BLOW-SAND TERRITORY

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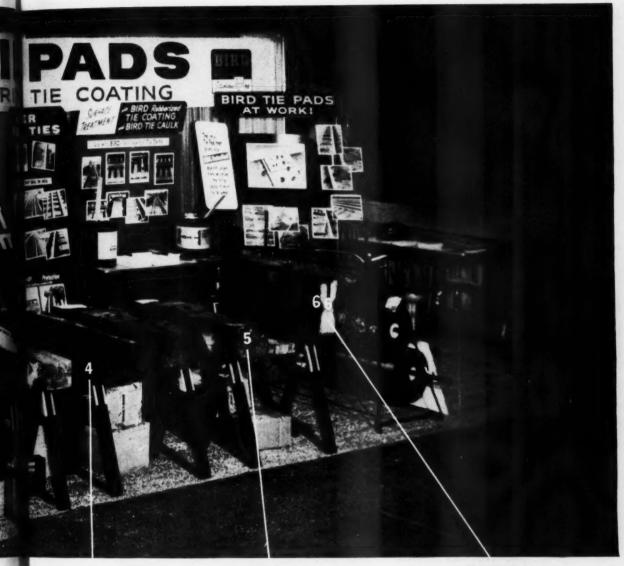
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After 9 years of Bird Tie Pad potential tection in critical desert territor, moisture or sand has not penetral the effective and durable seal Bird Self-Sealing Tie Pads.

after PROOF SELF-SEALING TIE PADS SUT TRACK MAINTENANCE COSTS



. TANGENT TRACK

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seal

CTUME

This tie, removed from track for chibition after 12 years' protection with a 12" Bird Self-Sealing Tie ad, shows no destructive effects of ther moisture or abrasion.

5. CURVES

Bird Tie Pads were installed on a 4° curve in 1947. There is no plate cutting after 13 years.

6. BRIDGE TIES

This expensive 8" x 16" bridge tie on a 4° curve has been protected for 12 years with Bird Self-Sealing Tie Pads.

Note: In every one of the above actual case histories, there has been absolutely no contact between the tie plate and tie because of the rugged construction of the Bird Tie Pad. No deterioration of the underplate or spike-hole wood has taken place due to the effective and durable seal of the pad to the tie. Write for proof to Dep't HTS.

EAST WALPOLE, MASS.



3 WAYS TO SAVE...

with

PRECAST CONCRETE PRODUCTS

CRIBBING

Concrete crib walls, because of their economy and adaptability, are the permanent answer to most retaining wall problems. Architecturally pleasing too.



Precast maintenance-free Amdek bridge beams are made under factory controlled conditions, delivered on schedule, erected quickly with minimum traffic tie-up.



Concrete culvert pipe is permanent. Available in the shape, size and strength required. Has superior hydraulic properties.





AMERICAN-MARIETTA COMPANY

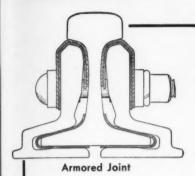
CONCRETE PRODUCTS DIVISION

GENERAL OFFICES:

AMERICAN-MARIETTA BUILDING
101 EAST ONTÁRIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEMALL 4-5600

LONGER RAIL LIFE WITH

RAJO Renewal Fibre Parts



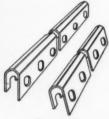
RAJO Assures

Greater SAFETY

More ECONOMY

and

Less MAINTENANCE



Armored **Head Pieces**



Armored **End Post**



Regular **End Post**



Regular Head Pieces



Base Piece Armored and Regular



Bushing

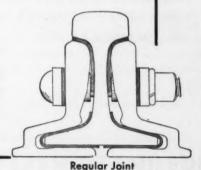


Washer Plates Regular Joint

A NEW ADDED CONVENIENCE

RAJO FIBRE RENEWALS are now packaged as individual sets, each carton containing all the components necessary to change out an insulated joint.

Packaging simplifies handling and installation problems, and guarantees peak performance of insulated joints at minimum maintenance cost.



RAIL JOINT COMPANY

DIVISION OF POOR & COMPANY (INC.)

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NEW YORK 7. N. Y.



CP-610-RP-8 Screw Spike Driver



CP-610-RTP Impact Wrench



CP-612-RLP Impact Wrench



CP-117 Demolition Tool

CP IMPACT WRENCHES ... the modern way to lick many a back-breaking job ... there's a CP Impact Wrench that's right on the job. A CP-610-RP equipped with an 8-inch shank, for example, will drive screw-spikes in 6 seconds. CP-610-RTP "Torque Control" Wrenches drive high strength bolts to exact tightness on bridge, trestle and building jobs — handle up to 1½" bolt size. The CP-612-RLP has the power to remove frozen or rusted nuts and bolts on frog and switch assemblies; then reassemble them to precise tightness.

have earned a reputation for hard-hitting easy-to-handle action. For every job from driving cut spikes or sheeting to breaking surface on crossings, foundations, and overpass replacements, the CP-117 Demolition Tools can double in brass with speed

and efficiency.

Quick ways to simplify BRIDGE, BUILDING and MAINTENANCE-OF-WAY JOBS...use CP AIR TOOLS

More and more railroads are finding that CP Air Tools can cut job time... and reduce costs. They get heavy work done better and faster. To get complete information on these and other CP Air Tools, call your nearest CP office.





CP Portable "Power Vane" Rotary Compressor



Class PM Stationary Compressor

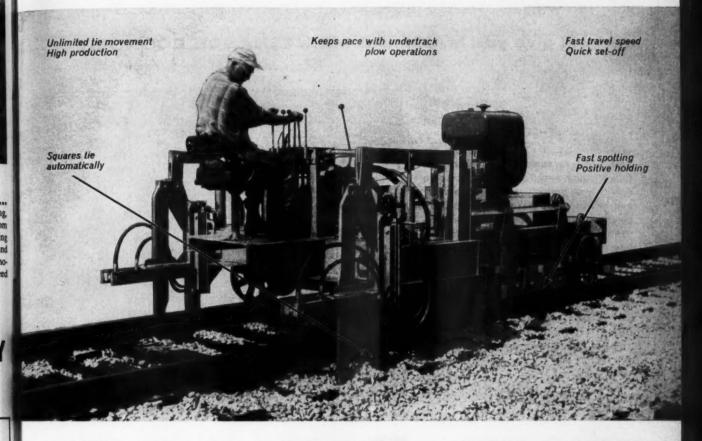
CP AIR COMPRESSORS... Portable "Power Vane" Rotary Compressors in capacities of 250, 365, 600 and 900 cfm can be supplied flange wheel mounted as self-propelled or towed units. Ideal for construction and maintenance-of-way work.

Stationary air-cooled, two-stage Class PM Compressors can be installed without protection outdoors . . . will not freeze. Ideal for snow blowing, car retarder and switching operations.

Chicago Pneumatic & East 44th Street, New York 17, N. Y.

STATIONARY AND PORTABLE AIR COMPRESSORS . IMPACT WRENCHES . SCALERS . PUMPS . CHIPPERS . ROCK DRILLS

P-S POWER TIE SPACER



DOES ALL TIE-POSITIONING JOBS FASTER!

HANDLES ANY TIE-POSITIONING JOB—changing number of ties per rail . . . straightening and spacing ties for renewal or tamping operations . . . whatever the job, P-S Power Tie Spacer ends costly hand labor, speeds work.

HANDLES TIE SPACING FASTER—keeps pace with undertrack plow operations . . . two P-S Power Tie Spacers handle 700 to 800 ties per hour. Unlimited tie movement is provided through 24-inch stroke hydraulic cylinder plus magnetic hold-down which can be repositioned in seconds without releasing tie or respotting the machine. Hold-down doubles as fast, accurate spotting brake. Top visibility and top speed combine to give top capacity.

DOES BETTER JOB—one arm of each set of tie tongs is guided against machine frame. Closing tongs automatically squares tie. Controlled power assures P-S Tie Spacer won't hump track. Track surface is never disturbed.

OFFERS PLUS FEATURES—simple, rugged, easy-to-maintain design of off-the-shelf components gives

exceptional reliability and fast, far more economical upkeep. Travel speed, forward and reverse, is an honest 25 mph. Set-off uses hydraulic jacks—lateral set-off wheels carry machine off track. Track is cleared for traffic in moments. Machine is fully insulated for working and traveling. Check with Pullman-Standard to learn about our full line of track maintenance equipment.

For Detailed Information on P-S Track Maintenance Equipment, Contact

Track Equipment Department

PULLMAN-STANDARD

A DIVISION OF PULLMAN INCORPORATED

1414 Field Street, Hammond, Indiana

Representatives in Principal Cities of the United States and Canada

Mr. C. H. Anderson Cleveland, Ohio Mr. Caesar Baldassari San Francisco, Calif.

Mr. R. A. Corley Newark, New Jerse Mr. J. M. Fruhwirth Omaha, Nebraska Mr. Clarence Gush St. Louis, Missouri Mr. Fred W. Holstei Mr. Robert J. Wylie St. Paul, Minnesota In Canada,

ORGANIZED MECHANIZATION

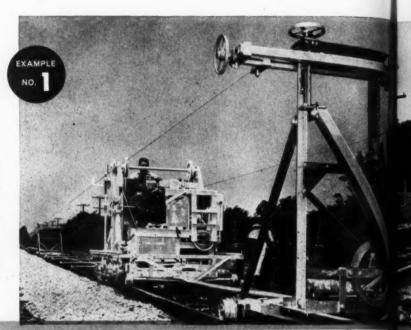
with NORDBERG MECHANICAL MUSCLES®

will give you MAXIMUM MAINTENANCE ECONOMY

OUT-OF-FACE SURFACING AND SMOOTHIN'

In out-of-face surfacing, the Tamping Power Jack and Trak-Surfacer team raises track, tamps ties to hold the raise, and provides the necessary propulsion power. Here, the Trak-Surfacer uses a stretched wire 125 feet long to form a reference line for the top of the grade rail. Following right after, the Gang Tamper tamps all ties. Then the Trakliner® and Line Indicator line tangent and curve track.

In Smoothin' operations, the same basic Nordberg machines are used, except that the Trak-Surfacer uses a shortened wire 50 feet long.



RELAYING OPERATIONS

The Dun-Rite® Gaging Machine and Bronco is the key machine, used with these other Nordberg units: Power Wrench, Self-Propelled Spike Puller, Ballast Router, Self-Propelled Adzing Machine, Rail Drill, Tie Drill and Spike Hammer, for completely mechanized relaying operations. Following close behind the adzing machines, the Dun-Rite anchors tie plates to the ties in exact position, so the head-to-head gage is correct. Speed and extremely accurate and uniform gaging are made possible with the Dun-Rite because tie plates are gaged before the rail is placed.





For more complete information covering the use of these moneysaving Nordberg Mechanical Muscles in ORGANIZED MECHANIZATION, call or write today. ■ ORGANIZED MECHANIZATION has two vital parts. First, providing the best combination of equipment to do a given job, and second, coordinating that equipment into an efficient working team.

The advantages of Organized Mechanization, utilizing Nordberg Mechanical Muscles include (1) Single source of responsibility for all machines; (2) Each machine is designed and built to work most efficiently with other Nordberg machines; (3) Max-

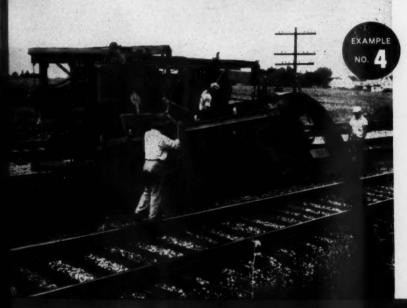
imum parts interchangeability between machines; and (4) Training of operators is easier and abilities are readily transferred to operate all machines built and backed by Nordberg.

Illustrated below are four examples of the way in which Nordberg Mechanical Muscles are used to make up Organized Mechanization teams to do specific maintenance jobs . . . to assure better, faster track maintenance work at the lowest cost.



TIE RENEWAL

In this operation, the Nordberg Gandy® is one of the important machines used for reducing tie renewal costs. This efficient unit is used to pull out old ties, insert new ties, pile or load old ties, set machines on or off the track, distribute new ties, including hauling them to the work location. The Gandy is also a great money saver in bridge timber renewal. Other Nordberg machines used in this operation are the Hydraulic Spike Puller and Carriage, Tie Drill and Spike Hammer.



BALLAST CLEANING OR WASTING

Three basic Nordberg machines are used to handle your ballast cleaning or wasting problems. (1) The Cribex®—to remove material from the cribs; (2) The Ballastex®—to excavate ballast between tracks or on shoulders and waste it or feed it to (3) The Screenex®—which takes fouled ballast from the Ballastex, screens it, and returns cleaned ballast to the track or shoulder in any desired proportions.

(View shows the Screenex in operation, close-coupled to, and being towed by, the Nordberg Ballastex.)

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PRES



NORDBERG Mechanical Muscles





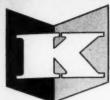
A <u>new RIBBONRAIL</u> Service—an entirely new approach to the best-known, most dependable rail welding system known today—designed to increase your production and cut rail welding costs. Watch for the announcement.

OXWELD RAILROAD DEPARTMENT



UNION CARBIDE

'Linde'', "Oxweld", and "Union Carbide" are trade marks.



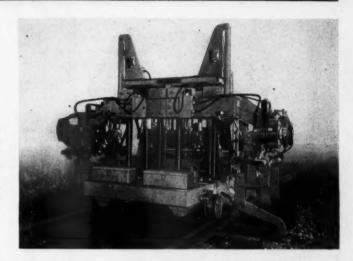
ALAMAZOO for 1960

'HANDYMAN' POWER TAMPING JACK

- Fast, powerful hydraulic jacking.
- **2** Exclusive, self-adjusting tie nippers.
- Firm, fast tamping by four powerful electric vibratory tamping units.
- A High performance, low maintenance.

THE 'HANDYMAN' is the fastest and most accurate power tamping jack in use on American Railroads today. One railroad says, "the 'Handyman' easily stays ahead of two production tampers operating in tandem." Another states, "we can easily raise track with the 'Handyman' in excess of 1000 feet per hour." Still another makes a report than "The Kalamazoo 'Handyman' does the tightest tamping in the least time of any of the tamping power jacks tested. It is also the only one equipped with a tie nipper."

Ask for Bulletin No. HM-3



#40 BALLAST EQUALIZER WITH PLOW AND SWEEPER



Featuring

- New directional front plow
- Scarifying and de-weeding discs that operate in either direction
- All-enclosed four wheel drive
- GMC Diesel powered (optional)
- S Engine or gear driven sweeper (optional)

Ask for Bulletin No. BDS-2



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Serving Railroads and Industry Throughout the World Since 1883



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with safe, effective

HERBICIDES

Economical, long residual Geigy herbicides save time and money—do the job right the first time. One application stops weeds before they start-gives you season long control.

Safe to humans and animals, nonirritating to skin, non-flammable, noncorrosive to equipment. Safe to use on valuable land. Available through leading distributors.

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New full color booklet contains complete direc-tions, diagrams, applications and other useful data for both Simazine and Atrazine.



ORIGINATORS OF DDT INSECTICIDES

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MARCH, 1960

RAILWAY TRACK and STRUCTURES

Standardization . . .

Industries have, why not railroads?

A guest editorial by

Frank R. Woolford President, AREA

Looking back at the beginning of our American railroads (those in other countries are no different) one will readily recognize the ever-existing problem presented by the individualism of designers. I refer to that "something" each railroad engineer-designer guards so jealously and resists giving up so strenuously. This quality gave us many differences in critical points of railroad design, such as the track gage, rail patterns, track turnouts, bridge structures, and all manner of parts of locomotives, cars, signals and communication facilities, so that interchangeability between properties was not possible.

With the passage of time, and greater fraternization among peoples in all sections of our great country, a mutual understanding among the sections served found a fertile area for growth among our transportation properties. The result was a more realistic approach in dealing with the differences in design criteria. The need for operating economies and satisfactory operating procedures finally brought all the major rail properties into a closer association with each other. The result was that the major differences were so altered or corrected as to make locomotive and car interchange a reality.

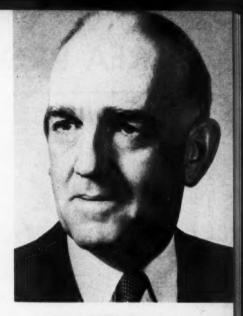
In the beginning industrial plants and their operations in general dif-fered little from rail properties in the lack of agreement regarding equipment renewal parts or material specifications. With the passage of time, the emphasis on competition and the resulting need for more economy in operations caused our general industrial group to look to research for assistance. Here the question arose as to why the multitude of differences in specifications among the items used in machines, and motors and other such products. Attempts to answer this question produced unquestionable evidence of the great economies that would be realized through a similarity of specifications.

Such a changeover of manufacturing operations in industry was recognized as a major undertaking which could not be successfully accomplished by a few isolated groups. It required, on the other hand, a national steering or piloting group organized for joint action. Out of this need came our present guiding organizations, such as the American Standards Association and the American Society for Testing Materials.

Our American rail transportation properties are no different from general industrial activities as to standardization of designs for materials used in roadway, signals and communication and their maintenance. Cooperative action, through group or committee investigations, research and test studies, is more or less a "must" requirement for the success of such an undertaking to produce the best opinion obtainable and then general acceptance and adoption of the findings.

The Construction & Maintenance Section of the Association of American Railroads, more commonly known as the AREA affords a medium through which standardization of roadway, signal and communication activities can be satisfactorily progressed. During the present year, this association has high-lighted this subject in general. I do believe the seed has been sown by two general area groups of our American railroad system, the Southeastern and Western groups, which have adopted standards applicable to rail and track accessories.

Again, may I express my opinion that full standardization of American rail transportation properties will eventually be a reality. For early accomplishment as far as materials used in roadway, signals and communications are concerned, our present C. & M. Section of the Association of American Railroads is the only practical and logical medium through which to progress such accomplishment.



Other AREA officers



E. J. Brown Senior Vice President



R. H. Beeder Junior Vice President



Neal D. Howard Executive Secretary

AREA PROGRAM > Complete schedule of



NRAA making plans for exhibition in 1961

By J. B. Templeton President, NRAA

In this non-exhibit year the attention of the National Railway Appliances Association is focused on the exhibition to be held in March 1961 coincident with the AREA conven-

This is destined to be an exhibition of historical importance. There are several reasons that lead me to make this statement. One is the fact that our member companies, practically without exception, are engaged in strenuous efforts to develop new and improved equipment, devices and materials designed to help reduce railroad maintenance costs. In view of these efforts it is not necessary to have a crystal ball to predict that our next exhibition will be characterized by numerous new cost-saving developments, many of which will be on display for the first time.

Another reason why I believe our next exhibition will be outstanding is the very strong possibility it will be staged in the new \$34 million Exposition Center now under construction on Chicago's lake front.

The size and scope of this new Center are not easy to describe or imagine. The main exhibition hall, for example, will cover an area of 310,-000 sq ft. It will provide ample space and an ideal setting for our own ex-

My enthusiasm for the Exposition Center leads me to point out that it will also offer modern and complete facilities for holding meetings. These will be 14 meeting rooms with capacities ranging from 200 to 800 people. Adjacent will be plenty of public and private dining space, with full banquet service for groups up to 5,000. And all connected by frequent bus service with "loop" hotels only 21/2 miles away.

"It is my hope this year, with the aid of our committees, to make our convention program the most stimulating, thought-provoking and educational that it is possible to make it."

The thought contained in this statement by President Frank R. Woolford of the AREA is reflected in the program below of the association's annual convention to be held at the Hotel Sherman, Chicago, March 14-16.

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The program indicates that particular emphasis was placed this year on special features sponsored by the standing committees. A record number of such features - addresses. movies, symposiums and panel discussions-is on the program. The pur-

MONDAY MORNING, MARCH 14, 9:00 to 12:00-Grand Ballroom

Presidential Address—F. R. Woolford, chief engineer, Western Pacific Reports of Executive Secretary Neal D. Howard and Treasurer A. B. Hillman

Symposium on standardization

"Standardization—A tool to greater industrial efficiency," by Norman L. Mochel, manager, Metallurgical Engineering, and consultant, Westinghouse Electric Corporation.
"Standardization—Can effect huge savings for the railroads," by J. S. Fair, general pure

chasing agent, Pennsylvania.

"Standardization—As the trackwork manufacturers see it," by J. P. Kleinkort, manager, Railroad Products Division, American Brake Shoe Company.

"Standardization—From the standpoint of the engineering and maintenance of way de-

partments," by R. H. Beeder, chief engineer system, Atchison, Topeka & Santa Fe.

Address—"The responsibilities of maintenance officers to their managements," by
D. W. Brosnan, vice president - operations, Southern System.

MONDAY AFTERNOON, 1:30 to 5:30-Grand Ballroom

Reports of Committees

Clearances (1:30)

- -"Freight car clearance tests on DL&W RR," with commentary by Randon Motion picture Ferguson, electrical engineer, Research Staff, AAR
- -"The engineering profession comes of age," by H. A. Mosher, president, National Society of Professional Engineers
- Address—"Oil pipe lines on railroad rights of way" (illustrated), by W. T. Eskew, Jr., assistant general manager, Southern Pacific Pipe Lines, Inc. Contract Forms (2:55)
- Address—"The relationship between the attorney and the engineer on the railroad," by Henry W. Oppenheimer, general attorney, Chesapeake & Ohio Engineering and Valuation Records (3:25)
- Symposium—"Depreciation and its impact on budgets and maintenance expenditures," L. W. Howard, land and tax commissioner, Chicago & Western Indianaof Chicago, moderator
 - "From the viewpoint of the valuation engineer"—Morton Friedman, retired chief voluation engineer, New York Central System
 - "From the viewpoint of the engineer maintenance of way"—J. Bert Byars, assistant to chief engineer, Denver & Rio Grande Western
 - 'From the viewpoint of the chief engineer"—E. W. Smith, assistant to chief engineer, St. Louis - San Francisco

Yards and Terminals (4:03)

- Motion picture—The P&LE's new retarder yard near Youngstown, Ohio—"The New Gateway," with commentary by E. G. Brisbin, chief engineer, Pittsburgh & Lake Emi Economics of Railway Location and Operation (4:40)
- Address—"Operating innovations—present and future" (illustrated), by M. I. Duna, vice president operations, Chesapeake & Ohio

Waterways and Harbors (5:18)

TUESDAY MORNING, 8:30 to 11:55—George Bernard Shaw Room

Reports of Committees Water, Oil and Sanitation Services (8:30)

Cooperative Relations with Universities (8:50)

- Address—"The career development of engineers on seven railroads," by V. J. Roggeveen, associate professor of civil engineering and transportation, Stanford University Wood Bridges and Trestles (9:25)
- Address—"Fire-retardant treatments on the Santa Fe" (illustrated), by L. C. Colliste. manager, tie and timber treating department, system, Atchison, Topeka & Santa Fe Masonry (10:00)

Symposium on prestressed concrete. (To be presented with report of the Committee on Impact and Bridge Stresses)

Impact and Bridge Stresses (10:15)

Symposium—"Application of prestressed concrete to railway structures" (illustrated), E. J. Ruble, research engineer structures, AAR, moderator

Join us! Have coffee, rolls, fruit juice RA

of events at the Sherman Hotel, Chicago

pose of these features, says Mr. Woolford, is "to bring to the members the maximum amount of information possible within the overall time limitation of our convention."

Because of the added features on this year's program the morning sessions are scheduled to start a half hour earlier than in the past - 9:00 on

Monday instead of 9:30, and 8:30 on Tuesday and Wednesday instead of 9:00. The registration desk will open at 7:30 am each day of the meeting. It will, in addition, be open for preconvention registration from 10 am to 3 pm, Sunday, March 13.

The most important social feature is the annual luncheon on Tuesday.

Special features indicated thus

Research—Dr. C. E. Ekberg, Jr., professor and head, Department of Civil Engineering, lowa State University

L. P. Nicholson, railway representative, Portland Cement Association Design—W. R. Wilson, assistant bridge engineer system, Atchison, Topeka & Santa Fe Construction—P. S. Gillan, general manager, Florida Prestressed Concrete Company and Steel Structures (11:05)

Address—"Construction and loading of half-scale test bridge at Northwestern University" (illustrated), by Gerald C. Ward, civil engineering administrative director, Truss Bridge Research Project

dress—"Truss bridge research program and current results" (illustrated), by John F. Ely, acting director, Truss Bridge Research Project Waterproofing (11:45)

Association Luncheon-Grand Ballroom, 12 noon, Tuesday

Announcement of results of election of officers Address by Frederic B. Whitman, president, Western Pacific, on "The challenge for progress"

TUESDAY AFTERNOON, 2:15 to 5:30—George Bernard Shaw Room

Buildings (2:15)

● Address—"Control joints in masonry block construction" (illustrated), by W. C. Panarese, railway representative, Portland Cement Association Highways (2:45)

Address-Address—"Federal-aid highways and the railroads—a status report," by Bertram D. Tallamy, federal highway administrator, Bureau of Public Roads

Wood Preservation (3:30)

Ties (3:45)

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Maintenance of Way Work Equipment (4:05)

Panel discussion—"Training of work equipment operators and mechanics"—R. K.
Johnson, superintendent of work equipment and reclamation, Chesapeake & Ohio,

Economics of Railway Labor (4:50)

Motion picture—"Mechanized bridge and building gangs," with commentary by R. L. Fox, process engineer structures, Southern System

WEDNESDAY MORNING, 8:30 to 12:00—Grand Ballroom

Reports of Committee

Roadway and Ballast (8:30)

- -"Highlights of asphalt treatment of ballast" (illustrated), by G. L. Hinueber, engineering laboratory manager, AAR Rail (9:15)
- -"Wheel load, wheel diameter and rail damage" (illustrated), by C. J. Address-Code, assistant chief engineer - staff, Pennsylvania Special Committee on Continuous Welded Rail (9:50)

Motion picture—"The Rio Grande's big push

- Motion picture—"Field loading welded rail on the Santa Fe" Track (10:30)
- Panel Discussion--"Standardization of track turnouts," S. H. Poore, assistant engineer, Chesapeake & Ohio, moderator

M. C. Bitner, managermethods and cost control, Pennsylvania

F. W. Creedle, chief engineer, Trackwork Products, Railroad Products Division, American **Brake Shoe Company**

M. R. Klingel, chief engineer, Minneapolis, St. Paul & Sault Ste. Marie M. J. Zeeman, engineer of track design, Atchison, Topeka & Santa Fe Closing Business (11:30)

Installation of officers Adjournment

WEDNESDAY AFTERNOON, 1:30

Post-convention inspection of AAR Research Center

RT&S Coffee Bar, Parlor O, each morning ◀

Directory of committee meetings and other events

Luncheons or meetings of individual committees or other groups are scheduled to be held as follows:

Sunday

AREA Arrangements Committee - meeting, 9:00-12:00, Gold room* Registration-10:00-3:00, Mezzanine Board of Direction - meeting, 2:00-5:00, Orchid room Economics of Ry. Location and Oper.— meeting, 1:00-5:00, Jade room Roadmasters' Association — meeting,

9:00-5:00, Holiday room

RT&S-Railway Age Breakfast Bar, 7:30-9:30, Parlor O Roadmasters' Association — meeting, 9:00-5:00, Holiday room Ties—meeting, 2:00-5:00, Time room Highways-luncheon, 12:00-5:00, Ruby

Engineering and Valuation Records— luncheon, 12:00-2:00, Emerald room Water, Oil and Sanitation Servicesluncheon, 12:00-1:30, Gold room

Yards and Terminals-luncheon, 12:00-1:30, Room 107 Contract Forms-luncheon, 12:00-1:30,

Orchid room Waterways & Harbors—luncheon, 12:00 -1:30, Gold Coast room

Clearances-3:00-5:00, Life room Continuous Welded Rail - luncheon, 12:00-1:30, Parlor K

Board of Direction - luncheon, 12:00-1:30, Old Chicago room Tellers-3:00-5:00, Polo room

RT&S—Railway Age Breakfast Bar, 7:30-9:00, Parlor O

Tellers-7:00-12:00, Gold room Roadmasters' Association — meeting, 9:00-5:00, Holiday room

Reception for speaker's table guests,— 11:30-3:00, Parlor O

Reception for committee chairmen, 11:30 3:00, Parlor M Track-meeting, 2:15-3:30, Time room

Buildings—meeting, 9:00-5:30, 107 Wood Preservation — meeting, 8:30-12:00, Emerald room

NRAA-meeting, 10:30, Jade room

Wednesday

RT&S-Railway Age Breakfast Bar, 7:30-9:00, Parlor O

National Association of Railway Engineers of Tests—meeting, 9:00-12:00, Gold room—luncheon, 12:00, Ruby room — meeting, 2:00-5:00, Gold room

Board of Dir. and Arrangements Com. -luncheon, 12:30, Louis XVI room Board of Direction - meeting, 2:00-5:00, Orchid room

* Rooms for all committee luncheons and meetings, except that of Committee on Continuous Welded Rail, in Parlor K, are located on the first floor, directly above the mezzanine floor. Parlors K, M and O are on the mezzanine floor.

● There's a genuine need for more maintenance of way work equipment —a whole lot more. This holds true for all kinds of modern machines, and even for some not yet developed.

This is the impression gained through personal interviews and long-distance telephone calls to railway maintenance officers on eight large roads. When assured that what they had to say would not be attributed to them or to their railroads, these officers spoke their minds freely on the need for work equipment—present and future. They withdrew from their personal files statements listing the items of equipment they expected to acquire in 1960 and also told of their future goals in this respect.

One for each roadmaster

"What I'm working toward is to have enough production tampers to assign one to each of my roadmasters. That's the best way I know of to help in maintaining a good-riding track," said one maintenance officer. These words were similar in character to the remarks made by several others.

Uppermost in their minds was the desire for a good-riding track. The speeds of passenger trains make such track essential, they believe. This objective is to be attained primarily by

How much more work equipment?

making small track lifts in connection with out-of-face surfacing, although adequate tie renewals are also a factor. Naturally, the lines of heavy traffic are to receive the most attention and the objective is to place the work of raising, surfacing and lining these tracks on either a four or five-year cycle basis. Branch lines, if not now on a cycle basis, will ultimately be placed on such a basis, but with longer intervals between surfacings.

Consequently, all but two of the officers interviewed stated they were acquiring production-type tampers as their budgets permitted. The two exceptions included one road which already has reached its goal of one machine for each roadmaster. The other road believes it already has enough of these units to take care of its needs because it uses them in the south during winter months and on its northern lines during summer. As a result, these units are in service 11 months a year.

Considered of next importance is the acquisition of related surfacing equipment. This includes tamping jacks, ballast-working and equalizing units, lining machines and sighting devices for both raising and lining. One road was striving for four sets of surfacing equipment for each three road-masters. "We don't have enough road, "and it is necessary for us to surface more often than the stone-ballasted roads. With this equipment we'll be able to maintain good line and surface for our passenger trains."

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Produces large returns

"I don't know of any maintenance operation that pays more dividends than mechanized surfacing," said another officer. "That is why we are spending so much for this equipment."

It is apparent that on some roads the tamping of ties with production tampers is the only operation involved in surfacing work that is mechanized. The raising, sighting and lining operations are carried out by hand as they always have been. One officer stated that a primary objective was to get two production tampers per division. After that, he plans to fill out the surfacing gangs with the related equipment. The progress in this direction is determined entirely by the funds available.

All of the officers, however, stated that they were in need of more of the raising, sighting and lining equipment. Such units are considered necessary not only to effect the full savings possible from production tampers but also to get more surfacing work done each year.

Tie-renewal operations

Various reactions were found relative to tie-renewal equipment. It is apparent that this diversity of opinion is tied directly to the present general tie condition of individual roads. On the one hand are those roads on which tie-renewal work has been pretty well mechanized. On the other are those

What they bought last year

In 1959 railroads spent a record \$35.8 million for M/W work equipment, an increase of \$0.8 million over 1958. The number of units also increased, by nearly 1400. Leading the parade (see table below) were automotive, rail-laying and ballasting and surfacing equipment. In fact, some units within these categories showed spectacular increases. For ex-

ample, the number of trucks obtained increased nearly 150 per cent, rail saws and drills over 700 and 100 per cent, respectively, and production tampers over 100 per cent. Other items that showed significant advances include anchor applicators, spike drivers and pullers, tamping power jacks, track gagers and liners, tie spacers and aerial booms.

Purchases of M/W work equipment by categories

Ballasting equipment	1956	1957	1958	1959
B&B tools and equipment	853	790	678	906
Cranes	540	440	436	380
Grading equipment	- 82	145	65	77
Misc. track machines	325	365	190	254
Power plants	798	480	342	287
Rail-laying equipment	498	353	351	258
Tie-renewal equipment	898	733	352	1,000
Transportation men & mat'l	360	176	224	192
Weed-control equipment	3,293	4,147	3,269	3,695
Communications	157	212	158	216
Unclassified	_	129	148	462
	390	421	295	166
Total units reported	8,194	8,391	6,508	7,893

What is the thinking of maintenance officers regarding the need for work equipment, present and future? What will they buy? What new types of machines are still needed? Reported in this article are the answers to these questions as given by maintenance officers representing a number of large roads.

that have yet to get into this aspect of mechanization.

Said one officer: "We put in a lot of good treated ties during the war and our replacements aren't running more than 40 to 50 per mile. Under these conditions our maintenance gangs and section forces can do this work cheaper. Perhaps, when I have more ties to put in per mile, I'll think about getting tie-renewal equipment."

Another officer having a good tie condition with few replacements necessary at the present time, echoed these statements. Both roads, however, have relatively large track forces which can easily handle the present small number of renewals.

"Do you realize," another officer pointed out, "that tie renewals take a large part of my maintenance budget? The cost of the ties alone amounts to 13 per cent of my entire budget. If I were to install all of the ties I wanted to, tie costs would be 24 per cent of my track budget. Any increase in the cost of ties and in the cost of renewing them, affects all my other work." This officer stated that he has his tie renewals on a 40-per cent mechanized basis now. This, he believes, is about as far as this work can be mechanized without putting tie renewals for the entire system on a rigid cycle basis.

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In general, the officers interviewed said they are pretty well equipped for handling current rail-laying programs. No doubt this stems from the fact that, although railroads plan to lay more rail in 1960 than in 1959, rail programs for the past few years have been at a low ebb. Orders for equipment in this category will be mostly replacement machines.

More B&B mechanization

Several officers expressed interest in achieving greater mechanization of their B&B forces. They feel that heavy bridge repairs particularly should be mechanized. Movable staging, truckmounted aerial booms, compressors and off-track cranes were mentioned. The need was expressed for more

house trailers for B&B gangs and trucks with flanged-wheel attachments.

Two officers stated that many of their cranes and pile drivers had reached the age where they would have to be replaced. Because of the cost of these units, replacements were being made gradually, one unit at a time. One officer stated he was converting all of his pile drivers to diesel operation and would have them all converted by the end of this year. Another officer stated he had enough ontrack cranes. What he wants now is more off-track cranes so he won't have to use train crews.

All those interviewed were asked what they would buy if they should be told by their managements they could mechanize all maintenance operations insofar as possible. All but one of the officers quickly mentioned the types of machines they would buy, as well as the machines they hoped would be developed in the future (see box). The one exception was an officer who felt that the question inferred that he was not obtaining enough machines. He stated he was getting approval for all equipment requested on his budget.

Equipment always needed

Most of the officers stated they would always need more equipment. Any machine which would reduce their costs would be considered, they said. Viewing the situation realistically, they were aware that they could not buy all the machines they wanted at one time, but were acquiring them as fast as available money would permit. Also, they explained, the replacement of presently owned equipment was taking a large portion of their equipment budgets.

"The big reduction in maintenance costs through machinery has already taken place," said one officer. "It is now a question of a new machine doing more work than another."

"Every maintenance officer will always want more work equipment," said another officer. "If he doesn't, he'll be standing still.

They want these new machines

"What I want is a production tamper which will automatically index itself after getting proper compaction and which will tamp two or three ties at one setting. Yet, it cannot be so big that it will require a train crew."

"We need a machine for cutting brush, making a 6-ft swath on each side of the track and then going off track to cut the slopes."

"More and more track is being taken up because of CTC. This leaves a natural roadway for off-track machines. We can get rid of engineer-pilots and conductors and get more work done if we had off-track tampers and other equipment."

"When laying our continuous welded rail, we have to cut it for insulated joints, crossings and turnouts. What we need is a high-speed rail saw and a drill which will bore 6 holes at one time."

"We need two things—a wood preservative and plastic filler for spike holes and a machine to fill all eight spike holes at one operation. If we can't have that, I'll settle for a machine which will properly apply tie plugs."

"We have quite a bit of soft-track territory which requires a lot of attention. I would like to see more mechanized equipment, preferably off-track, to help our tampers get more work done."

"I'd like to see a new spot tamper which I could turn over to my section gangs for general spotting of ½ to ¾ mile of track a day. The machine would have to be cheap enough to justify buying it for section gangs."

"There's a big need for a device for routing ice, snow and rocks out of both flangeways at crossings in terminals. The device could be mounted on a weed mower so that the machine could be used summer and winter."

"Am not satisfied with available equipment for branch-line tie renewals. Would like machines light enough for a small crew yet heavy enough to de the job."

WELDED RAILS > > >

The problems of handling continuous welded rails are new, at least to the roads installing such rail for the first time. These roads will find, as they study the practices of other users of welded rail, that there are wide differences in the methods and equipment used in carrying out some of the operations involved in handling and laying it. In text and illustrations this article brings out the major differences.



When rails are shifted directly from track shoulder to the tie plates

MONON uses Meco Rail Layers for handling long rails from the shoulder to the tie plates. Gang has 35 men.

Procedures and

 With the use of continuous welded rail gaining rapidly the question of how to handle such lengths in the field is constantly confronting additional roads.

Those roads that first went in for welded rail in a large way have rendered a service by pioneering in the development of equipment and techniques for handling the long lengths.

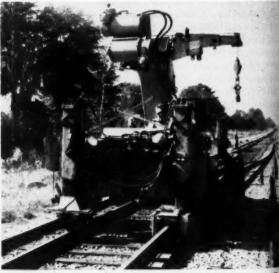
Their practices are often used as a guide by those who are confronted for the first time with the problem of laying long rails. Occasionally, however, a newcomer among the users of welded rails will depart from previous practice in some important respect.

An example of such departure is seen in the methods used to unload long rails. At first unloading was almost invariably accomplished by pulling the cars out from under the rails. However, the practice of pushing the cars out from under the rails has since been developed and adopted by a number of roads. Adherents of this latter method are convinced of its superiority because it places the locomotive at the point where the rails are leaving the cars, thereby greatly simplifying the matter of transmitting signals to the engine crew.

With this major exception most roads seem to be in general agreement on the methods to be used in loading long rails and anchoring them on the cars. The use of threaders, or "eyes," I i i



LONG RAIL being moved from intertrack space directly to the new tie plates by a Speed Swing, using a threader.



SEABOARD uses Austin-Western Hydraulic Crane to lay long ralls Crane has threaders front and rear, flanged rollers on one side

equipment for handling them in the field

when unloading such rails has also become general practice. These devices not only act as guides to direct the rail to the desired location on the ground but they keep it upright during the unloading procedure.

Some few roads "tailor" their long rails to fit the location. The majority of them, however, produce the welded rails all in the same length and then cut them in the field as required to fit turnouts, insulated joints, etc. One large user of welded rail has adopted the practice of cutting the rails as necessary with a torch or portable saw. At crossings with unpaved highways the practice is to deposit the rails in trenches which are then backfilled. At paved highways the practice on this particular road is to stop the train during the unloading operation long enough to permit the rails (two are unloaded at a time) to be torch cut, after which the rails are pulled back as necessary to clear the highway.

The practice of this road has changed in another important respect. Formerly it installed buffer rails at insulated joints. This practice has been discontinued. Now the ends of long rails are joined directly at the in-

sulated joints.

Marked differences of opinion prevail regarding whether the long rails are to be unloaded on the track shoulder or on the ties between the rails. Majority opinion favors the first-mentioned practice. Maintenance officers in this category regard as unsafe the practice of depositing the long rails on the ties between the running rails, even if they are spiked down. They point out that any high ties must be adzed to keep the rails from projecting above the running surfaces of the track rails.

On the other hand those few roads that continue to unload welded rails between the track rails see no disadvantages in the practice except for the fact that the need for spiking the rails leaves holes in the ties. One road that has been following this practice for about three years spikes the rails at every fourth tie and applies short metal or wood ramps at the ends to prevent dragging equipment from catching on the rails. A slow order of 40



BURRO crane threads rail into center of track.

When they are moved from the shoulder to the center of the track



SPEED SWING straddles one rall as it uses threader to lift welded rail from shoulder to position between running rails.



SCHIELD BANTAM crane with flanged wheels shifts long rail into center of track. Note guide threader on machine

Handling welded rails cont'd



BURRO CRANE uses tongs to pick up welded rail and place it on tie plates. Crane moves about standard rail length each time.



RUBBER-TIRED Schield Bantam "Rail-Roader" operates on its flanged wheels while placing long rail with tongs on Rock Island.



SPEED SWING straddles track as it lays rail on tie plates.

mph is kept in effect during the period the long rails are left on the ties, which may range up to 60 days.

Where the long rails have been unloaded on the track shoulder there is a difference of opinion regarding whether to move them directly from that position to the new tie plates or to shift them first to the ties between the rails before putting them in final position. Proponents of the first-mentioned procedure are satisfied that this method, eliminating one step, is the most economical, and they see no disadvantages in it.

On the other hand, those who favor the practice of first shifting the rail to a position on the ties have definite reasons for taking this position. For one thing, they say, it then becomes easier and safer to bar out the old rail. For another, they point out that the work of shifting the rail longitudinally, if necessary, is facilitated, especially if the long rail has first been placed on angle bars previously removed from the old rail.

Various types of equipment may be used for shifting long rails from the shoulder directly onto the tie plates. They include rubber-tired cranes which may be equipped with flanged rollers for operation on the opposite rail (see page 40). With this equipment threaders are invariably used to guide the rail into position.

How rail layers are used

Meco rail layers (page 40) are also used for this operation. Two of the machines, using tongs, are operated as a team. The chief engineer of a road that uses these machines explains that they are operated 1½ to 2 standard rail lengths apart. The first machine takes a grip on the long rail and pulls it up to a point on the ends of the ties, after which it moves on to the next position. When the second machine moves up it lifts the rail onto the tie plates. A Burro crane is included in the gang to handle the smaller machines to and from the track.

Both off-track and on-track equipment (page 41) is used to shift long rails from the track shoulder to a point between the running rails preliminary to final laying. Threaders are also used as guides in this operation.

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From the position on the ties, the long rails are lifted onto the tie plates by cranes operating either on or off the track. As shown by the photographs on this page rail tongs are frequently used for this purpose but threaders may also be used.

The emphasis in this article has been on the methods and equipment used in handling long rails, rather than on the subsidiary operations, spike pulling, adzing, spike driving, etc., involved in laying them. The reason is that it is in the area of handling that new problems have been presented by long rails in in contrast to those of standard length.

The subsidiary operations are carried out in much the same way as before although many new and improved units have been made available for performing these operations. The purpose of the new machines is not only to reduce costs but to speed up the work. This is necessary because long rails can be laid faster and the subsidiary operations must be done compondingly faster.

Present-day equipment for performing these operations will be made the subject of an ensuing article.

PRR's formula for B & B • Cycle maintenance efficiency • Local purchasing

- Smaller gangs
- More machinery
- Detailed programming

The development of versatile equipment for substantially speeding up work and lowering unit costs prompted the Pennsylvania to reorganize and mechanize its B&B forces. Through the adoption of new machines and smaller gang units, it is effecting savings which permit it to obtain even more machines and materials required for an expanded program.

• Large bridge-and-building gangs on the Pennsylvania are becoming a thing of the past. Through more intensive mechanization of these forces it is possible for gangs of five and six men to accomplish more work than the former gangs of 8 to 10 men.

With the B&B forces on four and a half of its nine regions already working on a mechanized basis, the road has found that the mechanized forces are not only speeding up current maintenance and construction work but they are also making progress in cutting down the former backlog of deferred maintenance.

The Pennsylvania has for years equipped its B&B gangs with power machines-probably more than most railroads. Such equipment included power saws, generators and electric tools, air compressors and pneumatic tools, welding equipment, and tubular staging. However, it was still felt that too much work was being done by hand. Of recent years unit costs had been mounting with the result that the amount of work that could be done with the limited funds available was shrinking. Hence, there was a rising backlog of deferred work.

The advent of new types of equipment, such as the more versatile paintspraying outfits, spider-type staging, aerial booms and hydraulic bridge-tool outfits, started the Pennsylvania off on the idea of greater mechanization of its bridge and building work.

In 1957, a pilot program involving the use of small mechanized B&B gangs was initiated on the PRR's Southwestern region. The results demonstrated that substantial manpower savings could be realized through the use of proper machines. It was de-

cided, therefore, to make a more intensive study aimed at more complete mechanization of B&B work over the entire system.

As a first step, some of the officers made visits to six other railroads to observe various machines in actual use. The purpose was to evaluate the practicability of adapting these units to PRR requirements and to determine whether modifications would be neces-

Meanwhile, eight of the road's supervisors of structures were canvassed to ascertain the kind and amount of maintenance each was holding in abeyance. So as to have a complete understanding of what was involved the supervisors were also requested to submit a brief description of the repair work to be done, and an estimate of the number of men and amount of equipment required. They were, in addition, requested to submit recommendations as to how B&B work could best be mechanized.

These deferred-maintenance items embraced all types of work. For buildings it included the retirement, remodeling and renewal of passenger and freight stations and other wayside buildings. It also included incidental repair work on windows, roofs, eaves, doors and floors. For bridges it in-

Here are machines in the program





WHEEL ATTACHMENT on truck crane makes it flexible enough for both on and aff-tract work. Here it is speeding up work by delivering a pile from storage area.

PRR's formula for B&B efficiency cont'd

cluded major and minor repairs to abutments, slabs, arches, bridge seats, copings and pipes, as well as painting work. Also included were repairs to signal bridges, turntables, water tubs, tunnels, wharves and docks, and dredging work.

Meanwhile, a close look at PRR practices had pin-pointed several areas of inefficiency. It was found, for example, that carpenter gangs, comprised of from 8 to 10 men, were frequently working on jobs which required only 4 men, if equipped with the proper tools. Also, such gangs could not do work of other crafts to complete items of programmed work. Furthermore, it was decided that gangs larger than five men could not be adequately supervised by one foreman.

Another finding was that gang efficiency was being impaired by having to handle materials received from the stores and purchasing departments. Suitable sites for the storage of these materials had to be found and, in some instances, cover provided for protecting them from the weather. Sometimes delays and inability to plan work ensued because materials were not furnished as needed.

The study also revealed that inadequate programming of the work resulted in too much time being lost in traveling and making camp set-outs. Miscellaneous complaints, such as leaking roofs, plumbing leaks and heating-plant failures, were interfering with programmed work. Also, emergency work, capital-account items and joint projects were competing with regular maintenance.

Certain deficiencies in equipment were noted. Camp cars, necessarily parked on a siding or spur, daily necessitated traveling time to and from the job by the crews. Hand painting from scaffolding was slow and inefficient. The lack of pressure-grouting and shotcreting equipment required that work calling for such equipment be done under contract. Also, existing equipment lacked mobility and versatility.

Mark principal objectives

To be certain that it was headed in the right direction, the road listed the objectives of the proposed plan to mechanize and reorganize its B&B forces.

One is to cut down and eventually reduce its backlog of deferred maintenance. This is to be accomplished by: (1) Reducing, to the fullest extent possible, the number of facilities to be maintained; (2) assignment of some variable portion of its available force to catch up on the deferred maintenance of the facilities retained; and

(3) rigorous programming of work,

Another objective is to place the maintenance of bridges and buildings on a cycle basis as rapidly as possible. This is to be brought about by: (1) Incorporating the work done on deferred-maintenance items into the cycle as they are completed; (2) incorporating regular maintenance into a cycle program; (3) making the length of the cycle intervals consistent with the facility and type of maintenance required; and (4) programming the cycles.

The third objective is to increase overall efficiency by: (1) Assigning the major portion of the force to a tight schedule of strictly programmed work; (2) retaining some arbitrary portion of the force for emergencies and other non-program work; (3) incorporating new work and work requests from other departments into the program in priority order; and (4) providing an efficient supply of materials through local purchases and direct contact with suppliers and also by eliminating the stockpiling and rehandling of materials.

The fourth aim is to increase productivity and efficiency of available manpower through: (1) Making the force as mobile as possible by use of highway trailers and rail-highway equipment; (2) decreasing lost time by parking trailers close to the job site and scheduling the work for short

> > >

Machines in the program



PATTON B&B SPRAYER, with outriggers supporting Spider Staging, makes this small paint crew self-sufficient.



SHOTCRETING WORK can be practically a continuous operation of to the two tanks on this True All Gun portable outfit.

moves in sequence; (3) providing specialized or general-purpose equipment to do more work with fewer men per job; and (4) reorganizing manpower to provide more gangs with fewer men to fit the needs of the program.

Implementing the new plan

Having decided upon the objectives, the next step was to implement the plan to achieve them. This was effected by several important changes in policy. These were first introduced on the road's Southwestern region because of its experience with the pilot program. One change was to reorganize the B&B forces into small, highly mechanized gangs. Another was to set up clear-cut work programs and budgets. Another important step was to authorize the purchase of a large proportion of the materials locally.

In programming the work, all items are included. This involved not only the regular maintenance but also all capital-account items, joint-facility jobs, inspectors on state and federal projects and work originating in other departments. The work is scheduled on a consecutive location basis to minimize lost time in moving the gangs. Possible retirements are considered when compiling this information.

In setting up the program, the work of each gang is analyzed by the local supervisor of structures. Each location

Principle units needed in B&B mechanization program

8 1/2 sets Grayco "PRR" package Hydra-Spray equipment with service kits.

4—Hi-Reach EHE 45 truck units, complete with Schield-Bantam chassis with railhighway attachment

 Hi-Reach aerial unit mounted on International truck, complete with Fairmont rail-highway hydraulic unit

2—Strato-Tower aerial booms, one 65 ft and other 50 ft, complete with Schield-Bantam chassis and rail-highway attachment

5-Schield-Bantam Model T-35 rail-highway truck cranes with magnets

5—Patton Bridge Sprayer outfits with outriggers

2—Patton screening spreaders

4—True All Gun grouting machines with double tanks

8 sets Spider staging, complete with adjustable platforms
1—Fairmont hydraulic Bridge Tool package complete

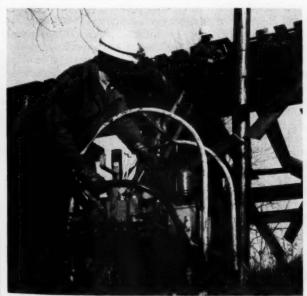
In addition, several Fairmont cranes are on order for mounting on trucks for suspending the Spider staging. Also, several house and tool highway trailers were leased.

is considered and estimates are prepared on a "family-tree" pattern. That is, the number of men for each gang is determined for the type of work it is to do, and below it information relative to the equipment required is shown. These "family-tree" estimates are developed in a conference attended by the assistant engineer structuressystem, the district engineer, the local supervisor of structures, the general foreman, assistant supervisors, inspector of maintenance of way and a clerk.

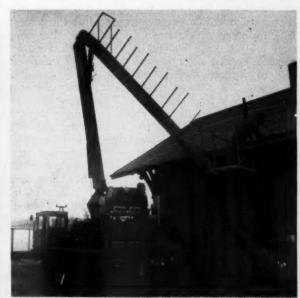
The resultant plan is approved by the regional engineer, who joins the conference when he can. The supervisor of structures then prepares the final program, which shows the dates that the work is to be done, the materials required and the equipment necessary.

One of the important steps in putting the new plan into effect was a change in the policy in the procurement of materials. After numerous conferences with officers of the purchasing, stores and accounting departments, this procedure was developed:

About one month before a job is scheduled, the supervisor of structures makes a check of the proposed work and prepares a bill of material. Where the total value of the material for a specific job does not exceed \$1,800,



HYDRAULIC Bridge Tool package gives a small gang great flexibility for sawing, boring, boit cutting and nut tightening.



AERIAL BOOM provides quick access to hard-to-reach places. Paints, mastics and greases can be applied by this outfit.

PRR's formula for B&B efficiency cont'd

the bill of material is submitted to about three of the local building supply firms for quotations on all required materials, except treated lumber, exterior paints, dry cement and bridge grease-type and aluminum-filler coatings. The latter materials are ordered and obtained in carload lots by the purchasing department and are distributed by M/W department supply cars.

The bill of material, together with the prices bid, is submitted to the regional engineer for his approval. With his signature, the area storekeeper then issues a blanket requisition for the particular job and an order is placed. This order is valid for 90 days. If the job is not completed within this time, an extension for a reasonable time may

be requested.

The road has found that \$1,800 worth of material is approximately equivalent to the requirements for a job costing approximately \$5,000 for both labor and materials. Ordinarily this amount of material will keep a five-man gang busy for about 30 working days. In the past, the usual ratio of labor to material was 70 per cent labor to 30 per cent material. Now, with the high degree of mechanization, this ratio has been changed to about 60 per cent labor and 40 materials.

The \$1,800 for material is available only for the repairs covered by the approved program. For jobs requiring more material than this amount will buy, the material is obtained through the purchasing department following the normal procedure. In general, such large quantities are required for long steel bridges, large buildings, large concrete jobs and major painting projects. In such cases, these materials can be procured at reduced prices when when bought in large lots.

For minor repairs, the road's former practice of permitting local purchase of materials under blanket orders ranging from \$25 to \$100 is unchanged. This enables a foreman to obtain locally small quantities of lumber, cement, sand, gravel, hardware, plumbing fittings, roofing paper, shingles, nails, screws, window frames, and doors.

With this procedure, the itemized

bill is receipted by the foreman and sent to the local supervisor of structures. A copy of the invoice is forwarded to the area storekeeper, together with a receiving report and an M/W 12 charge-out report.

How equipment is selected

Since each of the nine regions of the Pennsylvania acts autonomously in many respects, the selection of the equipment needed for B&B mechanization is made on a regional basis. However, the road's M/W Machinery Committee first tested the various makes of machines. It invited the manufacturers of each type to demonstrate their equipment under actual field conditions. In these demonstrations, railroad operators used the equipment under the direction of the manufacturers.

From these field tests, the M/W Machinery Committee evaluated the different types. If the machines performed satisfactorily, they were included on an approved list so that regional officers could use their own preference in the selection of equipment. If the machines did not meet the railroad's needs, suggestions as to the alterations needed to meet requirements were offered to the manufacturer. If the requested changes were made and the unit met the standards desired, it was placed on the committee's approved list of equipment.

As of April 1, 1960, half of the nine regions will have reorganized their B&B forces into the small, mechanized units. The equipment includes truckmounted aerial booms with flangedwheel attachments, bridge-deck sprayers, crushed-stone spreaders, grouting and shotcreting equipment, spider-type staging and hand-operated cranes for hanging them, hydraulic bridge-tool outfits, and spraying equipment capable of applying mastics, paint and grease-type coatings. In addition, house trailers are being acquired to replace camp-car outfits.

Prior to the inauguration of the new plan on a region, every B&B employee of the region is brought to a central location for instruction in the new set-

up. Both slides and moving pictures showing the machines in actual service are shown. Also, the men are given an opportunity to operate the new ma-

On the regions where the new plan is in effect, the results have come up to expectations, say PRR officers. While more materials are being installed than in recent years, the unit costs of installation have gone down. The reduction in labor costs makes funds available for both the purchase of additional equipment and the materials required for the expanded program. And more necessary work is being completed.

"It is easier to mechanize bridgeand-building operations than track maintenance," according to one Pennsylvania spokesman. "This is because track maintenance is peculiar only to the railroads, whereas bridge and building work is being carried out continuously by contractors all over the country. As a result, great advances in mechanization have already been made in this field. All we have to do is adopt those machines and tools which are already available."

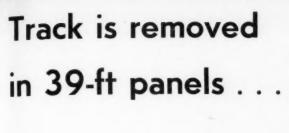
Another added: "It means more rigid programming of the work. We are investing heavily in equipment and we cannot afford to have it stand idle. We will be watching closely the use being made of these machines from a system viewpoint so that they can be moved promptly to where they are needed.

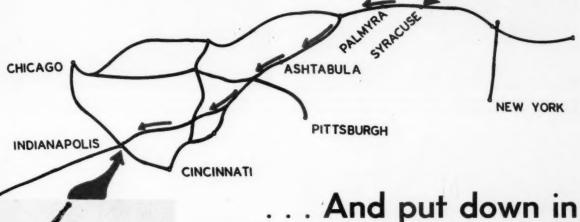
Numerous advantages are being anticipated from the new policy for procuring materials. It will result in a large reduction in the railroad's inventory of materials. Moreover, materials will be delivered to the work site when needed. Breakage is replaced on the spot so that all materials are immediately available. There is little or no damage from weathering. No unloading or rehandling of materials is necessary by company forces. Pilferage is practically eliminated.

In addition, the new policy substantially cuts down on the paper work required by the supervisor of structures, as well as by employees in the purchasing and stores departments. Consequently, the supervisor of structures has more time for supervision.

With the B&B forces on four and a half of its nine regions already working on a mechanized basis, the Pennsylvania has found that the mechanized forces are not only speeding up current maintenance and construction work but they are also making progress in cutting down the former backlog of deferred maintenance.

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• These two apparently unrelated situations prevailed on the New York Central:

(1) It had considerable main track on its multiple-track line in the vicinity of Syracuse, N. Y., which had been made surplus because of the installation of CTC. Some of the trackage of the paralleling single-track West Shore route was also scheduled to be retired.

(2) A large new hump-retarder classification yard, requiring the construction of many miles of trackage, was being built outside of Indianapolis, Ind.

But NYC engineers didn't regard the two situations as being unrelated. What would be more logical, they thought, than to take the surplus trackage and use it in the new yard? Carrying the idea still further, they decided to convert the old trackage into 39-ft panels for shipment to the new yard. Result: Substantial economies in time, labor and cost.

Indianapolis yard is a \$12.5-million

yard project which will require 190 turnouts and 70 miles of trackage. Two years ago, when the NYC was planning the layout of the yard, it studied what other roads were doing with the track-panel method of constructing tracks. Meanwhile, it also inspected the tracks which were to be retired with the possibility in mind of using them in the new yard. It was found that the old tracks were in good enough condition for reuse and could be converted into track panels without the necessity of dismantling them piece by piece. Because this technique would not only save the cost of dismantling track but also the cost of constructing it, the railroad decided to use it in building the yard at Indianapolis.

So much more track is coming up than is required at Indianapolis that the railroad can afford to be selective in deciding what track is to be made into panels. Track with badly worn rail is not used, nor is track with a poor tie condition. Instead, such track is dismantled and the rail and fastenings are loaded separately and sent to the road's scrap and reclamation shop at Ashtabula, Ohio. Turnouts also are dismantled. The recovered materials are shipped to Ashtabula.

Some of the materials salvaged at Ashtabula are shipped to Beech Grove, Ind., which is about 11 miles from the location of the new yard at Indianapolis. These materials consist of reclaimed frogs, switches, switch plates, rods and related materials, as well as the pre-cut and drilled rails, both full-length and closure, required to pre-assemble complete turnouts for use in the new Indianapolis yard.

yard 600 miles away

The NYC views this operation as an extended assembly line. One end is in the area of Syracuse where the surplus track is being taken up, and the other end is at Indianapolis, 600 miles away, where the track is being laid. In between it has two other important assembling parts, one at Ashtabula where materials are reclaimed and the other at Beech Grove where turnouts are prefabricated.

K. E. Dunn, the NYC's engineer of maintenance of way, pointed out that the recently built yards at Buffalo and Elkhart were constructed by conventional methods. Indianapolis yard is being built by railroad forces. "The other way tended to pile up cars and materials," and Mr. Dunn, "which required expensive switching, unloading and stockpiling. Now, we control our deliveries to requirements."

How it's done

Track panels-up and down cont'd



Anchors are removed and a buildozer is used to square up the joints by shoving from two to nine rails ahead on one side.



The joints are removed and hung at one end of panels, after which track is raised and left until needed at Indianapolis



3 On multiple-track lines the panels are picked up by a crane and loaded into gondolas. Four panels are loaded in each car.



4 On single-track lines the panels are loaded onto flatbeds an stored at Palmyra. When needed, they are loaded in an

Saves half the cost of taking up track

By converting the track into panels the NYC saves half the cost of taking it up. When a stretch of track is to be picked up in the form of panels, a bulldozer is used to square up the joints by shoving from two to nine rails ahead on one side. First, however, the rail anchors are removed and a special shoe is fitted over the end of the rail string to guide the rail base through the line spikes and tie-plate shoulders. A power wrench removes the nuts from each joint, after which the bolts are knocked out. The anchors are then reapplied, joint ties are spiked to the rails and the joint bars are hung by one bolt each on the rail ends. Three men with a Power Jack go over it and raise the joints and centers. The track is then left in that condition until such time as it is necessary to ship more panels to Indianapolis.

On the multiple-track lines the panels generally are picked up by a work train and two cranes. One is a locomotive crane which works from the dead track on which the work train operates. The other is an off-track crane which runs on the roadbed. When panels are picked up, the roadbed is left clean. Scrap ties not loaded with the panels are made into piles and burned.

Four track panels are loaded into each gondola. No blocking or cardepartment supervision is necessary because the panels remain below the car sides. The cars used are those awaiting repairs, such as new floors or for other defects that do not affect their ability to carry the panels.

From 30 to 40 cars are loaded in a day, but the actual loading of 40 cars can be done in three hours. About

70 cars are loaded at a time and set out for the operating department. In general, they are included in the first train that can take this tonnage without requiring an extra to follow. This sometimes permits panels to be loaded Friday at Syracuse and be laid in the track at Indianapolis the following Monday night.

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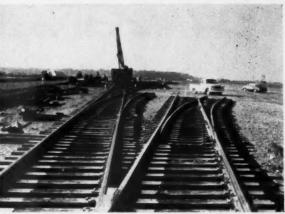
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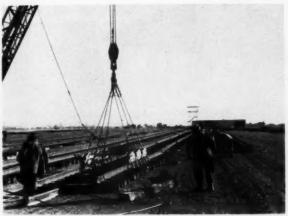
The procedure is varied slightly when taking up single track. In this operation, two off-track cranes are used. One is for loading the panels four high onto long flatbed trailers which are hauled three miles along the roadbed to Palmyra, N.Y. There they are lifted off the trailers by the other crane and stock-piled for use when weather prevents work on the multiple-track territory. This insures a continuous flow of panels to Indianapolis.



The turnouts are prefabricated in a shop near Indianapolis.
They are assembled complete but are shipped in two parts.



Prefabricated turnouts go in quickly. Although as many as 7 have been laid in one day, average call is for 8 to 10 a week.



3 A special electromagnet has been devised for unloading the panels in lieu of the usual spreader with rail tongs.



Two cranes will unload and place from 30 to 40 carloads of panels per day. From 50 to 80 cars are on hand as a backleg.

. Saves two-thirds the cost of building track

By using the panel method of constructing track, the NYC estimates it is saving two-thirds the cost of building track conventionally, piece by piece. The cost of building track at Indianapolis yard is averaging about 75 cents per foot. On the other hand the construction of trackage at Elkhart yard, done by conventional methods, cost \$2.58 per foot.

At Indianapolis two cranes, working at differnt places in the new yard, unload and place the panels in position. Best results are obtained when each crane builds three tracks at a time. A special electromagnet has been devised for picking up the panels in lieu of the usual spreader with a pair of rail tongs at each corner.

Together the two cranes will unload and place from 30 to 40 carloads of panels per day. In general, from 50 to 80 loaded cars are on hand as a backlog. After unloading, the ties are inspected to determine the need for replacements. However, because of the care used in selecting the panels before being removed from the original track, few ties need replacing. Later, the ties are adjusted by a Pullman-Standard tie spacer and the track is surfaced by mechanical equipment.

At Beech Grove the turnouts are prefabricated at a constant rate of two per day, regardless of the progress at Indianapolis yard. A template is used to assure accuracy and uniformity and as much of the work is mechanized as possible. The turnouts are prefabricated as complete units, after which they are disjointed at their centers and loaded on their sides into gondola cars. Two turnouts are loaded in each car.

It is frequently necessary to unload

and temporarily stock-pile the turnouts at Indianapolis yard until ready for laying. Indianapolis forces have laid as many as seven turnouts per day. The average call for them, however, is from 8 to 10 per week.

The maximum track force constructing the yard is 61 men. This compares with about 300 men used while building the Elkhart yard by conventional methods. So far, it has not been necessary to work the company forces at Indianapolis overtime, whereas, at Elkhart yard considerable overtime was necessary.

Indianapolis yard is scheduled to go into operation in July 1960, depending upon how fast the electronic and electrical work can be completed. In the future, if the square joints produce excessive maintenance, the road can weld or restagger the joints.

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NEW CONCEPT IN TRACKS

Tamper MULTI-GANG*

Greatly Lowers Maintenance Costs



A COMPLETE UNIT—all three machines (or other equipment) are housed in Main Car.

RAPIDLY REMOVED FROM TRACK by Crawler Set-Off . . . in a matter of seconds.

POWER DOWNFEED OF INDEPENDENT WORKHEADS . . . operates easily. HYDRAULIC PROPULSION . . . the Main Car travels up to 25 MPH.

THESE HYDRAULIC MACHINES are easily loaded on or unloaded from Main Car, by hydraulic Tail Rack

OR

LOOK WHAT THE MULTI-GANG WILL DO:

surface · line track · pull spikes without bending · remove or insert ties · torque controlled bolting · drills rail MULTI-GANG'S Main Car is 171" long x 113" wide x 84" high.

TAMPER MULTI-GANG PACKAGE UNIT

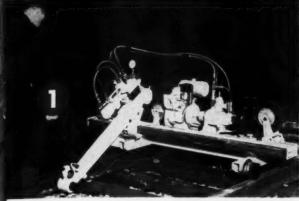
consists of: Main Car with Power Downfeed Tampers and Crawler Set-Off Hydrillbolter Spike Hydrejector-Tie Hydrenewer

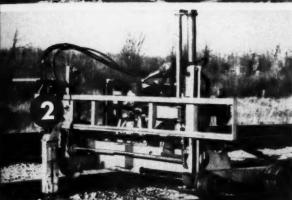
MULTI-GANG UNIT EXTENDS THE TRACK SECTION

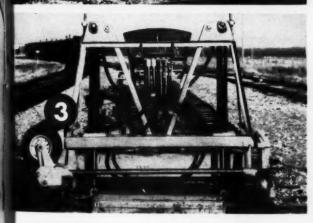
MARCH, 1960

RAILWAY TRACK and STRUCTURES

SECTION MAINTENANCE







HYDRILLBOLTER* (Model BD)

Combination Bolter and Rail Drill

Hydraulic Transmission Minimum Mechanical Replacement Parts

- single control lever,
- manned by one operator automatic change from high speed, low torque, for 'running up' nuts to low speed, high torque for nut tightening
- handles nuts on either side of both rails

- · drill attachment adapted in less than 2 min.
- · manned by one operator
- · easily adjusted for different rail sizes
- · drill bits quickly interchanged

HYDRILLBOLTER can be removed from track by two men.

SPIKE HYDREJECTOR* TIE HYDRENEWER* (Model PR)

Combination Spike Puller and Tie Renewer

pulls spikes without bending · lightweight · completely hydraulic • easily operated by one man.

Tie Renewer is adapted to Spike Puller in seconds No disturbance of track line or surface Renews without digging out tie ends

Removed from track by one man.

COMBOLINER* (Model JL)

Combination Powered Jack and Track Liner

powerful · lightweight · compact

- 10,000 lbs. thrust to throw the track in either direction
- simply insert lining anchors and slide out wheels to line the track
- lifts track to 10 inches, rail dogs engage automatically
- turntable allows easy pivoting cross level indicator reads directly in inches of elevation
- no wheels, axles to interrupt view of rails

Easy to remove from track.

ORGANIZE . . . MECHANIZE . . . ECONOMIZE with MULTI-GANG

For full information, contact unper AILWAY DIVISION

Head Office and Plant:

160 ST. JOSEPH STREET, LACHINE, MONTREAL 32, CANADA

25 Faukland Avenue Scarborough, Ontario 2281 Portage Avenue St. James Winnipeg, Manitoba

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* Patents Pending

STRUCTURES PRODUCTS

A special round-up of new and improved machines and other devices designed to help the M/W man in his efforts to reduce maintenance costs



Self-propulsion unit for . . .

Cribbing machine

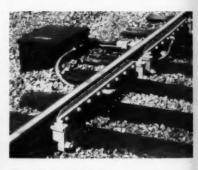
OPERATION by one man has been made possible, it is claimed, by the addition of a new hydraulic self-propulsion unit to the Nordberg Cribex. The manufacturer states that the new self-propelling feature eliminates the need of a helper and enables the cribbing operation to be accomplished faster. In addition to moving the machine from crib to crib, the new unit is stated to permit the operator to rock the Cribex back and forth to completely excavate wide cribs. Available on all new Cribex machines, the new unit can also be installed on those now in service. Nordberg Manufacturing Company, Dept. RTS, Milwaukee, Wis.



Hydraulic turntable for . . .

Ballast regulator

MANY changes have been made in the Kershaw Standard Ballast Regulator, Model 2FWJ, according to the manufacturer. Improvements include a heavier, welded steel frame, new reverse transmission coupled to the standard transmission, integral-mounted hydraulic turntable wheel and an all-steel roof. The new reverse transmission is connected to a right-angle drive by a slip-type universal-joint propeller shaft. The turntable is equipped with a safety lock to prevent dropping during operation. In addition, the improved machine is equipped with 20-in solid web, fully insulated cast steel wheels. The wheels are mounted on 21/2-in axles set to a 96-in wheel base. The axles are driven from a right-angle drive by a No. 100 roller chain with intermediate idler take-up sprockets. Removal from the track is accomplished by means of hydraulically propelled side set-off wheels. The photograph shows the machine equipped with a broom attachment. Kershaw Manufacturing Company, Dept. RTS, 2205 West Fairview Ave., Montgomery 3, Ala.



Greater capacity for . . .

Rail lubricator

MAXIMUM EFFICIENCY of rail-andflange lubrication and reduced maintenance costs are the benefits claimed to result from a number of improvements recently made to the Meco Model MC rail-and-flange lubricator. The usable lubricant capacity of the Improved Model MC is stated to be 320 lb, an increase of 120 lb over the previous model. The manufacturer states that other changes include an altered pump mechanism which permits greater ease of adjustment and a revised actuating mechanism which provides greater durability and simplified installation. Maintenance Equipment Company, Dept. RTS, Railway Exchange Building, Chicago 4.

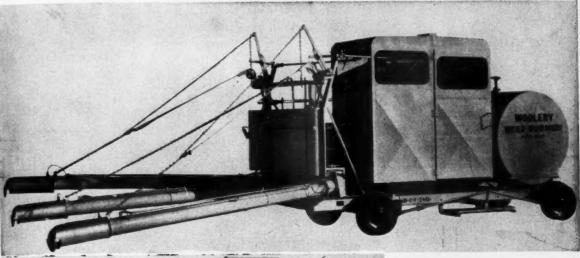


For medium-sized trucks . . .

Hy-Rail equipment

TRUCKS of 11/2, 2 and 21/2-ton capacity can now be equipped with Hy-Rail guide wheels for operation on either highway or railroad tracks. The guide wheels are raised or lowered manually through a twospeed gearbox. Hydraulic operation is available as an option. The front guide wheels operate vertically and are designed to support the entire weight of the front end of the vehicle when on track. The rear guide wheels pivot into place and are spring cushioned. They are designed to support only a portion of the rear load, the remainder being supported by the pneumatic tires which also ride on the rails. Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.

WOOLERY FOR LOW COST TRACK MAINTENANCE





WEED BURNERS

The model WB-2-F (above) has automatic tran mission with torque converter; constant blower speed regardless of rate of travel; an all steel cab with safety glass, two entirely separate brake systems and a final drive with chains and sprockets located outside the wheels for easy adjustment. A separate 15-H.P. air-cooled engine is used to drive the blower. Thus when speed is reducedsuch as is necessary in yard or snow melting work —the blower speed mointains the same rate and heat intensity.

The model COE (above) makes use of a torque converter on the propelling engine which gives any speed desired for burning or deadheading. It burns to a width of 25 feet using all five burners. If desired, a second trip can be made with the two outer arms extended to an additional width of five feet on each side. Burners are under separate and instantaneous control of the operator. The two outer arms can be raised or lowered or can swing in or out to coincide with the contour of the ground. Other Woolery Burners include the Model PB-B, 3 burner portable and the AB single burner portable (shown at right).

TIE CUTTERS - TIE-END REMOVERS

The Woolery Tie Cutter is a sturdy, light-weight machine that replaces ties with a minimum amount of disturbance to line or surface of the track. A reciprocating saw blade cuts the ties just inside the tie plate on both sides. The center piece is pried out and the Woolery Tie End Remover pushes the ends out thru use of a double-acting, double-ended hydraulic cylinder.





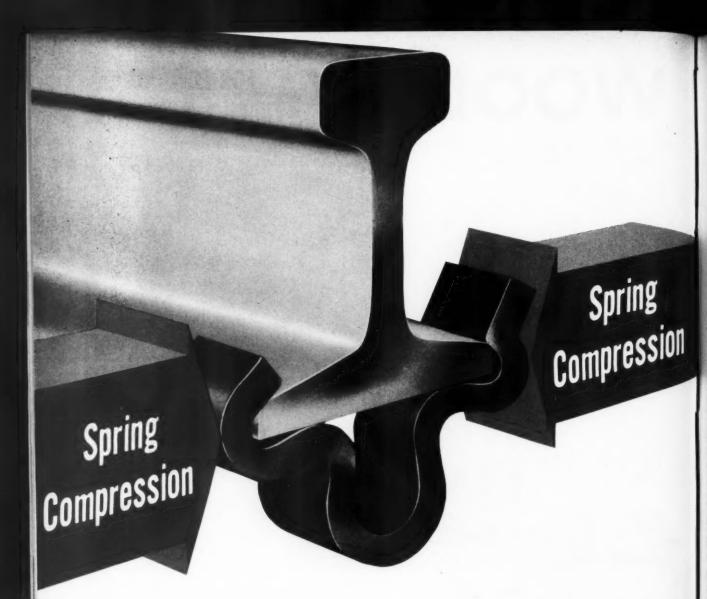


MACHINE COMPANY 29th and Come S.E., Minneapolis, Minn.

SPIKE DRIVERS



The Woolery Spike Driver is designed pr for use by the renewal gangs. Various othe matic tools can also be operated with it. I tired set-off wheels.



GREATER HOLDING POWER

because of

Powerful Spring Compression 4-Point Symmetrical Grip

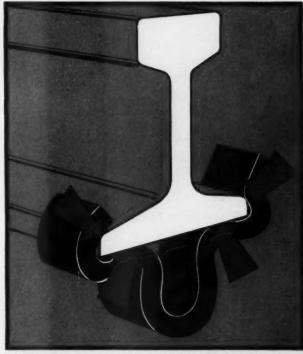
WOODINGS Advanced Type RAIL ANCHOR

Two powerful jaws, gripping the rail at four symmetrically-spaced points, make this the world's MOST POWERFUL Rail Anchor. Because of its superior strength, it is ideal for use on welded rail. The Woodings Anchor has highest reapplication value without reconditioning, and without loss of holding power.

The powerful grip of the Woodings Anchor comes from the spring compression illustrated at the left. It cannot be over-driven, whether applied by hand tool or by machine; and it is self-compensating for mill variations of rail dimensions. One-piece construction and careful heat treatment assure dependable uniformity. Design minimizes derailment damage.

Because the Woodings Anchor holds both sides of the rail base equally, it resists the tendency of the rail to twist or distort under stress. This feature is found only on Woodings Anchors.

Adopted by all Class I railroads, there are millions of Woodings-Anchors in use.



With its four-point symmetrical grip, the Woodings Rail Anchor is

BEST for welded rail
BEST for machine application
BEST for reapplication value



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WOODINGS FORGE & TOOL COMPANY

Main Offices and Plant, Verona, Pa. • Sales Offices, Chicago, III., St. Louis, Mo.

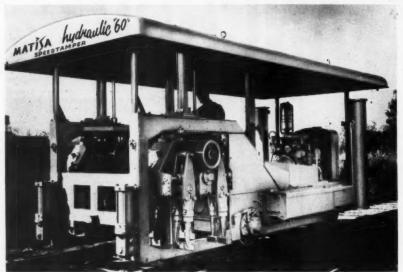
Transport machines with . . .

Utility trailer

EQUIPPED with rails for moving on-track machines over the highway, the Kershaw utility trailer can also carry off-track machines by folding the rails over the side. It is available with single, dual or triple axles and can be hitched to a lightweight truck.

To load or unload on-track machines the brakes on the trailer are set, or the wheels chocked, and rail ramps placed into position. Machines can then be rolled on or off the trailer. Kershaw Manufacturing Company, Dept. RTS, 2205 West Fairview Ave., Montgomery 3, Ala.





rapidly dropped into place on the adzed surface of ties and that the smooth foil upper surface speeds alinement of tie plates. The seals are rectangular in shape and are available in sizes to meet specifications. It is claimed that after five years in a test installation ties protected with Protek-Tie Seals showed no deterioration and the rails remained firmly fastened in the tie plates. Daubert Chemical Company, Dept. RTS, 4700 South Central Ave., Chicago 38.

facturer states that the seals are easily and

Improved operation for . . .

Production tamper

EFFICIENT use of hydraulics is featured in the new Matisa hydraulic "60" Speedtamper. As on previous models the machine uses the principle of vibration-compaction tamping, with the weight of the unit carried on tamped track. The new model has been designed to use hydraulics for propulsion, tamping and vibration dampening. Propulsion is accomplished by means of a hydraulic motor coupled to a two-speed transmission which drives the front axle. This improvement is claimed to result in smooth and fast operation.

The tamping units on the new machine are controlled by reversible hydraulic motors which are coupled to a screw drive. The manufacturer states that the new tamping system provides positive action and fast operation and eliminates the compressed air system and double clutches used on previous models. With the elimination of the compressed air system the machine is now equipped with a hydraulic system only. Less maintenance and the elimination of costly mechanical parts are the benefits claimed to result from the use of the new hydraulic tamping system. The new Speedtamper in-

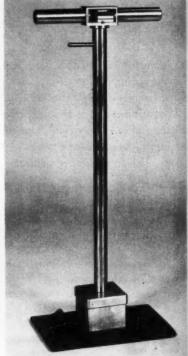
corporates a new hydraulically operated vibration dampener which is claimed to automatically prevent the transmission of vibration to the jacked-up track ahead of the tamper. Matisa Equipment Corporation, Dept. RTS, 1020 Washington Ave., Chicago Heights, Ill.



For use under tie plates . . .

Protective seals

ALUMINUM foil coated on one side with a rubberized sealing composition is claimed to effectively seal out moisture and abrasives from between ties and tie plates. Known as Protek-Tie Seals, they are said



Magnetic force used for . . .

Tie plate lifter

WEIGHING 10 lb, the Fairmont tie-plate lifter uses magnetic force to lift a centered load of up to 70 lb. Designated No.

Central of Georgia Car Repair Facility



...it's another ARMCO STEEL BUILDING

To reduce car repair costs and speed work, the Central of Georgia constructed a new centralized repair facility at Macon. Hub of the new installation is this 70 by 100-foot open-sided Armco Steel Building where most of the work is done. The building enables repairs to be made in all kinds of weather. The railroad expects to save \$10,000 annually with this "assembly line" operation.

Three other Armco Buildings of various sizes and shapes met requirements for shops and storage space at the same facility.

Get complete data on this better way to build. Send the coupon for a free copy of the Armco Railroad Building Catalog.

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No.

TURES

82060, the unit is equipped with a trigger, located just below the handle, for releasing the magnetic force. Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.

capacity of 50 tons. The unit consists of a heavy steel frame through which runs a horizontal screw. The screw is operated by a ratchet, which can be located at either end of the screw. A 10-in by 12-in steel plate is mounted on top of the frame and is attached to the screw so that it can be moved horizontally as the screw is turned. Length

of horizontal travel is stated to be 18 in, although other lengths can be provided to meet specifications. The manufacturer states that the screw has a fine pitch for easier traversing and a nickel bronze nut for lower friction. Height of the unit is 334 in. Templeton, Kenly & Co., Dept. RTS, Gardner Road, Broadview, Ill.



Introduces new line of . . .

Traxcavators

FEATURING lift arms and hydraulic cylinders which are located ahead of the operator's compartment, the Caterpillar No. 944 Wheeled Traxcavator is the first machine available in a new line of wheeled loaders. The bucket of the No. 944 has a capacity of 2 cu yd and is standard equipment. The new line includes two other units, to become available later this spring, the No. 922 and No. 966. These machines will be equipped with a standard bucket of 1¼ and 2¾-cu yd capacity, respectively.

The No. 944 is powered by either a gasoline or diesel engine, each rated at 105 net hp. Dumping reach is stated to be 313/4 in at the machine's maximum dumping height of 9 ft 2 in. It is designed so that the front tires are the most forward portion of the frame to eliminate damage to truck bodies during the loading process. Other features of the new wheeled loader include torque converter and powershift transmission, high-capacity hydraulic system, two-lever control of speed and direction, and two airboosted foot-brake pedals. Attachments available include side dump, light material and quarry buckets, fiber glass cab and lumber fork. Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.



For re-railing equipment . . .

Traversing base

A NEW traversing base has been announced for re-railing rolling stock, including cars and locomotives. Designated No. 5018, the base weighs 85 lb and is stated to have a



For track-lining machines . . .

Radio control system

REMOTE CONTROL of track-lining systems is now claimed to be possible with the use of radio control equipment developed by Motorola. The new equipment consists of a transmitter, receiver and control box. The transmitter and the control box are installed on a cart which operates behind and separately from the track-lining machine. The receiving unit is installed on the latter. Both the cart and track-lining machine are furnished by the railroad. The manufacturer states that only one man, who rides on the cart, is required to perform both visual sighting of the track and machine operation. In addition to riding on the cart, the operator can control the operations away from the cart by hanging the control box around his neck by means of a harness provided for the purpose. The box remains attached to the cart by means of a cable.

The system is designed to utilize radiotransmitted tone signals to control the funtions necessary to line the track. The lining machine is controlled by the operation of switches on the control box. This cause transmission of two-tone code signals to the receiving unit on the machine. When the signals are received tone-sensitive relays are activated closing the solenoid of the electrically controlled hydraulic valves which control the performance of the track-lining functions.

The manufacturer states that the operator can control the track-lining machine up to 1,000 yd away without interconnecting wine and the two units can be moved down the track under remote control at a speed of 15 mph when travelling from one section of track to another. Motorola, Inc., Comminications and Industrial Electronics Division, Dept. RTS, 4501 West Augusta Blvd, Chicago 51.



Flexibility claimed for . . .

Tandem scrapers

EARTHMOVING capacities of the L-W two-wheeled Tournapull and four-wheeled Speedpull prime movers can now be doubled, it is claimed, by using them with new tandem scrapers. The tandem system dispenses with the front axle and wheels of the second scraper, mounting it "pisgyback" on the rear of the front scraper. The units are mechanically connected by now read about the most efficient use of hydraulics ever applied to a tamper!



TAMPING UNIT DOUBLE CLUTCHES ELIMINATED ... NOW CONTROLLED BY REVERSIBLE HYDRAULIC MOTORS!

Less Wear on Man and Machine. Hydraulics eliminate shock loads, gears, clutches. Eliminate fatigue on man and metal!

Less Maintenance. Fewer costly gears and parts to buy-or wear. Less repair time, lower maintenance cost. Standard American components and parts.

More Production. Hydraulically positioned tamping units provide positive action, speedy operation. Assures maximum production.

Safe-Quiet. V-Belt drives with multiple disc clutches eliminate gears and noise, reduce maintenance and serve as safety clutches.

Fast-Efficient. Instantaneous split-head operation increases speed and production for both spot surfacing and out-of-face work.

EQUIPMENT CORPORATION 1020 WASHINGTON AVE

CHICAGO HEIGHTS, ILL

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ted by CTURES one hitch pin. Electrical cables and air hoses are attached by means of plug-in connections. In this way the tailgate, apron and bowl lift of the rear scraper are controlled electrically in the same manner as on the front scraper. It is claimed that the second scraper can be coupled or uncoupled in 30 min or less.

The manufacturer states that the new units offer a broad selection of prime mover and scraper combinations which permits the tailoring of the units to give a wide range of capacities for different types of jobs or changing conditions on the same job. Total capacities range from 18 to 56 cu yd, depending on the type of scraper, or combination, used. A total of 17 teamings is said to be presently available.

One of the advantages claimed for the new units is that doubling the capacity does not require a bigger, more powerful pusher. Since the scrapers are loaded one at a time, loading resistance is stated to be about the same as it would be if only one scraper was located behind the prime mover. Loading time is said to be faster than if each scraper had its own power unit.

Kits are available for field conversion of existing Tournapull-scraper combinations. It is said that almost all electrically-controlled units, built since 1947, can be tandemized. LeTourneau-Westinghouse Company, Dept. RTS, Peoria, Ill.



Ridges and grooves on . . .

Self-hardening frog

FLANGEWAYS of manganese steel frogs are claimed to be kept free of flowed metal by means of ridges and grooves cast on the point and wings of the frog parallel to the gage line. The ridges are level on top and 1/16 in wide and project approxi-

mately 1/8 in above the normal top of the casting. The grooves are 1/4 in wide, except the one nearest the gage line which is 7/16 in wide. The purpose of the ridges and grooves is to allow the frog to be work-hardened in the track, the grooves providing a place for the flowing metal to go. Wheels rolling on the raw manganese casting tend to flatten the ridge nearest to the gage line into the adjacent groove away from the gage line, it is said. The second ridge is flattened into the second groove,

and so on, until the flow tapers off. In this manner the flow of metal is said to be kept out of the flangeway while the top of the casting is becoming work hardened. The manufacturer claims that tests on a crossing frog which had been in service for two years showed that no grinding of flowed metal was required and the Brinell hardness had increased from around 200 to an average of about 365. The Frog, Switch & Manufacturing Co., Dept. RTS, Carlisle, Pa.



Three machines in one . . .

Turret derrick

EQUIPPED for operation either as an aerial boom, universal derrick or earth digger, the Truco Turret Derrick can also be equipped with flanged wheels for operation on either highway or railroad. Available in five models, the machine is equipped with a three-stage telescoping boom which will lift 500 lb to working heights of from 30 to 100 ft, a 15,000 lb winch line for use with the boom as a derrick or in any normal winch operation, and a 20 or 30-in diameter earth auger. An insulated, twoman, fiberglass basket is located at the end of the telescoping boom. A 4-ft by 6-ft aluminum platform is also available. Capacity is stated to be 2000 lb when the boom is horizontal and fully extended. Stability is provided by outriggers and jacklegs. The latter are located at the four corners of the truck chassis. All operations of the machine are hydraulic.

The Turret Derrick base is designed to be mounted just behind the truck cab in 16 in of space, leaving the remainder of the chassis free for use with any type of service body. The turret can be rotated through 360 deg. The boom is equipped with a folding link at its base for retracting within 16 in of space over the truck cab for stor-

The Truco TRRC-32 railroad conversion unit is available for application to any truck chassis of 16,000 gww and over to equip it for operation on railroad tracks.

It consists of two 16,000-lb axles and 14-in diameter hardened cast steel flanged wheels with roller bearings. The wheels are raised or lowered hydraulically. The flanged wheels carry all of the front portion of the truck and 30 per cent of the rear portion, the remaining 70 per cent being supported by the inside rear tires. Truck Equipment Company, Dept. RTS, 3963 Walnut St., Denver 5, Colo.



Binds plate to rail base . . .

Rail lock spike

ELIMINATION of movement between the shoulders of the tie plate and the rail basis claimed by the use of the Bernuth, Lembeke Rail Lock Spike. Stated to be a rail spike as well as a plate fastening, it is ap-

Look what you get when you specify Unit Rail Anchors!



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plied in the line holes of tie plates. The manufacturer states the new spike is similar to its Gage Lock Spike. The main difference between the two is the slight protrusion under the head of the Rail Lock Spike, at the position of the tie plate surface, instead of the offset that exists under the head of the Gage Lock Spike. The function of the protrusion is to bind against the rail base, skewing the plate (see photo) so that the opposite shoulder is forced into contact with the base. In this way, it is said, the base of rail is held tightly in the tie plate. Bernuth, Lembcke, Inc., Dept. RTS, 420 Lexington Ave., New York 17.

Improvements made to . . .

Cribbing machine

CHAIN-DRIVEN cribbing wheels and a larger engine are two of the improvements claimed for the completely redesigned Kershaw two-wheel Kribber. In addition, propelling of the machine is now foot-controlled and it is equipped with vacuum brakes. The manufacturer states that deadhead clearance now is more easily accomplished. Kershaw Manufacturing Company, Dept. RTS, 2205 West Fairview Ave., Mongomery 3, Ala.



Is now fully insulated . . .

Power tie spacer

WORKING and traveling operations of the Pullman-Standard Power Tie Spacer are now claimed to be fully insulated. In addition, the spacing cylinder of the machine now has a stroke of 24 in. This feature allows a tie to be moved 12 in. in either direction from the center or, if the cylinder is fully extended or retracted, a movement of the full 24 in. The manufacturer states that further movement of a tie is possible by repositioning the brakes and without releasing the tie being moved or respotting the machine.

The spacing mechanism of the self-propelled unit consists of two electromagnetic brakes, one for each rail. All components, except the brakes, are hydraulically operated. It is powered by a four-cylinder, Vtype, air-cooled gasoline engine and has a travel speed, in either forward or reverse, of 25 mph. Features claimed for the Power Tie Spacer include automatic squaring of



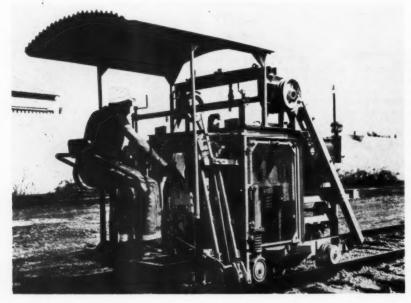
ties during out-of-face tie-renewal operations, independent tie-tong operation for lining up skewed or bunched ties, nipping and holding of ties for spiking, and controlled power for prevention of track humping. Pullman-Standard, Track Equipment Department, Dept. RTS, 1414 Field St., Hammond, Ind.

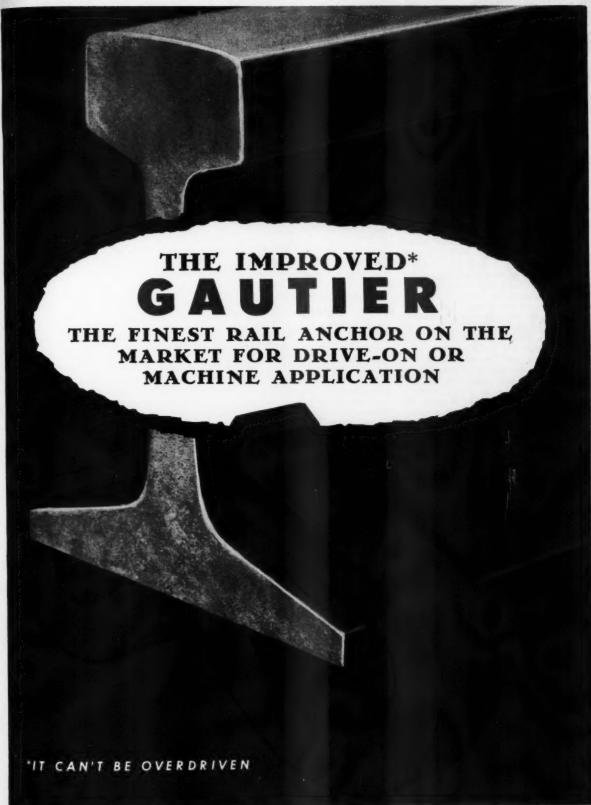
Improvements made to . . .

Tamping power jack

FASTER production, reduced maintenance and easier operation are the feature claimed for the new Nordberg Model D tamping power jack. A new all-hydraulic system has been incorporated in the Model D for the purpose of improving propulsion, raising the head, operating the jacking ram and setoff device and actuating the rail clamps. The time between jacking stations is claimed to have been reduced by the hydraulic propulsion and the addition of four wheel brakes. The track-raising time at each jacking station has also been reduced, it is claimed, by the addition of at automatic two-speed device to the lifting rams. The rail clamps of the new machine are designed to be automatically lowered or retracted as the lift rams are moved and are adjustable to various heights of rail.

Tamping speed of the Model D is stated to be reduced to efficiently control the raise of the track. Other improvements claimed for the new machine include higher horsepower, pivoted sheave arrangement, improved plas-





MID-WEST FORGING & MANUFACTURING CO.

General Offices: 38 S. Dearborn St., Chicago 3, III. • Manufacturing Plant: Chicago Heights, III. • Distributors: North American Supply Co., Cleveland, Ohio; William Allen, Denver, Colo.; John O'Brien, St. Paul Minn.; W. T. Richards, San Francisco, Calif.; G. C. Hunt & Co., Atlanta, Ga.

RAILWAY TRACK and STRUCTURES

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MARCH, 1960

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tic insulated wheels, larger capacity fuel tank and an adjustable seat and a canopy to improve the comfort and efficiency of the operator. It is said that from his new position the operator has a better view of the track, the tie being tamped and the pointers and level bubbles. Nordberg Manufacturing Company, Dept. RTS, Milwaukee, Wis.

Improvements made to . . .

Tie pad

INCREASED bond between asphalt seal and pad and a double-thickness seal are the improvements claimed for the new Fabco Super-Seal tie pad. The improved bond is said to be accomplished by the use of a newly developed master binder which makes the seal an integral part of the pad.

A number of advantages are claimed for the new double-thick seal, including instant binding of pad to tie upon contact, the complete sealing out of water and dirt between pad and tie, resistance to temperature extremes and prevention of water intruding into spike hole. The latter is said to be accomplished by the sealing compound flowing into the hole around the spike. In addition, the manufacturer states that, since the seal is applied to only one side of the pad, the tie plate can move without disturbing the bond between the seal and pad. Fabreeka Products Company. Inc., Dept. RTS, 1190 Adams St., Boston 24. Mass.



Shoulders shaped with . . .

Ballast carry wings

CONSTRUCTED for use on Jordan Spreaders and Spreader-Ditchers, the new ballast carry wings are designed to contour and shape the ballast shoulder to the exact dimensions required. They consist of two heavy steel reinforced wings which are hinge connected to the right and left main ditcher template or spreader wings, immediately behind the adjustable ballast section. Each of the new wings is also connected to the lower rear corner of the plow side wings by means

of a unversal-acting tubular brace. The new ballast carry wings are automatically positioned by the movement of the main wings and the front plow. When not in use they are folded against the main wing. The new wings are used after the ballast material has been plowed and distributed by the front plow to a pre-determined depth below top of rail and along the side of the track. The wings gather excess material and distribute it evenly throughout the ballast section, filling in low spots in the process. O. F. Jordan Company, Dept. RTS, East Chicago, Ind.



GANDY-SNAPPER combines the Gandy with the new Snapper which lifts the rails above "high wood" of ties during extraction.



SNAPPER is also available as a separate lightweight machine for lifting rails for insertion or removal of tie plates.

Versatility claimed for . . .

Gandy-Snapper

A NEW feature has been added to the Nordberg Gandy tie puller, tie inserter and material-handling crane, it is claimed. Known as the "Snapper," the new device lifts the rail during tie extraction so that the tie will clear "high wood." Manufactured as a special machine, the new Gandy-Snapper is stated to be basically a standard Gandy, but

with a larger engine and hydraulic pump, integrated with the Snapper. During tie removal operations the Snapper element of the machine is positioned over a tie adjacent to the one to be removed. Rail grips are lowered to hold the rail while two hydraulic rams push downward on the adjacent tie. The rail is thus lifted so that it will clear high portions of the tie being extracted. After the tie is removed the operator can "snap off" the two rams for a sharp return action of the rail. This action is claimed to

minimize any tendency to hump the track

The Snapper is also available as a separate, lightweight, one-man-operated machine. It utilizes a small engine and two vertical rams to lift the rails when it is desired to remove or insert tie plates when replacing ties. The rail clamps are manually operated both for gripping the rail and snapping them off. The machine is said to be easily removed from or placed on the track by two men. Nordberg Manufacturing Company, Dept. RTS, Milwaukee, Wis.



ROOTS AND LOADS TIES

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LAYING WELDED RAIL



9' WIDE TRACK CLEANING BUCKET

SPEED SHING

MODEL 441

Developed and Built for Railroad Maintenance

180° BOOM SWING DOES ALL JOBS!



LAYING STANDARD RAIL

MAINTENANCE

12 FAST CHANGE ATTACHMENTS

- Forks
- 11/4 Cu. Yd. Bucket
- Tote Hook
- 18' Boom Extension
- · Fork Tie Baler
- Track Cleaning Bucket
- Back Hoe
- Clamshell
- Back Filler Blade
- Pull Drag Bucket4 Cu. Yd. Snow Bucket

• Pile Hammer Optional Attachment

Flanged Wheels, Hydraulically Controlled

RAILROAD DIVISION CHICAGO 4, ILL.



80 Years of Service to the Railroad Industry FOR SMALL, HIGH SPEED ENGINES **NEW AND** IMPROVED ESSOLUBE HDX

KEEPS MOVING PARTS CLEAN

New Essolube HDX clings to bearing surfaces with a tough lubricating film that helps prevent wear and resists metal scoring under heaviest load conditions. From top to bottom, Essolube HDX keeps engines clean, keeps all moving parts free from carbon and varnish deposits.

When tested and compared (with a reference heavy-duty oil of higher than average quality) over one million miles of field tests proved Essolube HDX gave better lubrication in these vital areas:

- Bearings showed less wear from oil film breakdowns, and less corrosion from combustion by-products.
- Piston varnish deposits were greatly reduced, rings stayed clean and free acting – extending engine life.
- Anti-wear additive gave greater protection to cam shafts, valve lifters, bearings and gears.

Essolube HDX is another new product developed by Esso Research to reduce railroad maintenance costs. Specify Essolube HDX for maintenance-of-way and other equipment using small, high-speed engines. For information, write: Esso Standard, Division of Humble Oil & Refining Company, 15W. 51st St., New York 19, N.Y.



In Industry after Industry..."ESSO RESEARCH works wonders with oil"



"Should be on the desk of every railroad man responsible for economical MW operations!"

FABCO TIE PADS have passed all practical tests of time and tough service on bridges, curves, switches, station and station approach track, as well as in open track and in other areas where the mechanical wear of ties by the tie plates is excessive or severe.

FABREEKA PRODUCTS CO., Inc.

1190 ADAMS STREET, BOSTON 24, MASS.

NEW YORK + DETROIT + SKOKIE, ILL. + MILWAUKEE + PHILADELPHIA + PITTSBURGH + CINCINNATI + LONG BEACH + OAKLAND + PORTLAND, ORE. CANADIAN REPRESENTATIVE: INTERNATIONAL EQUIPMENT CO., LTD., MONTREAL

RAILWAY TRACK and STRUCTURES

U.S. PAT. NO. 2,770,421

integral part of the pad.

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FABCO Super-Seal TIE PAD — showing the double-thick asphalt Super-Seal,

plus the newly developed master binder which makes the asphalt Super-Seal an

MARCH, 1960

GANDY WAGON



Rail-Hiway

the dependable, economical VOLKSWAGEN

TRANSPORTS crews and tools over track or highway SAVES hundreds of man-hours

OFFERS unobstructed vision for track inspection



NO MORE OF THIS!



Carries 9 men over highway or track at 50 mph-plus; rear-engine design gives down-in-front view of track when inspecting.

THE GANDY WAGON is both a motor track car and inspection car. Depending on interior appointments, it can be either a transporter of section crews with their tools or a deluxe station wagon for engineers and supervisors with unobstructed down-in-front view of the track. Saves hundreds of working-crew hours by shifting men where they are needed in faster time.

The versatile Gandy Wagon does not interfere with train traffic; nor do trains interfere with it. This is because, in only 90 seconds, one man can transfer the Gandy Wagon from highway to track or back, at any grade crossing, by means of its unique electrically operated turntable-jack. At end of track run, the Gandy Wagon is just as easily turned around. In track operation, a high degree of safety is achieved by: (1) standard 14-inch Kalamazoo wheels fitted with safety rims (these wheels negotiate self-guarded frogs); (2) entire front

weight of vehicle rests on the flanged wheels which are hydraulically braked in conjunction with the car's rear wheels (3) turntable-jack is powered by an independent 12-volt electrical system which could also power a microwave telephone. Cruising speed of the Gandy Wagon over rail or highway is 50 mph or more; gas and oil consumption is less than half that of the average light truck or station wagon. Air-cooled motor, no anti-freeze nuisance; exceptionally low maintenance costs and high tire mileage are famed Volkswagen features which have made VW a light truck favorite in the U.S. Nation-wide service facilities.

You can buy and run a Gandy Wagon for less than half the cost of similar equipment. Leasing plan also available.

Telephone or write for details today.

Ask for demonstration of the Gandy Wagon on your track.



One man easily turns car 180 degrees on track to return to crossing in forward gear. See picture below showing electric turntable-jack.



GANDY WAGON Corporation

Box 151, Oyster Bay, N. Y. Telephone Oyster Bay 6-0518

STRUCTURES WHAT'S THE ANSWER?

Procedure for frost heaving

Where frost has severely heaved a spot on the low rail of a curve, what is the proper corrective procedure? Should the ties be adzed? If the outer rail is to be shimmed, what precautions must be taken to prevent track spreading where high shims are necessary? How should these shim run-offs be made? Explain.

Make smooth running surface

By A. S. EIXENBERGER Roadmaster Chicago & North Western Rapid City, S. D.

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It is assumed that this question deals with a spot of track that has heaved on the low rail of a curve in excess of two inches. In any event, the ties should not be adzed, as this will damage the treatment on the ties. Where frost has heaved a spot of track on the low rail of a curve, the first step to be taken is to shim the ties through the heaved spot so the running surface will be smooth. All shims should bear under the rail evenly, and this can be accomplished by using thinner shims under the thicker shims.

If it is necessary to shim the track over two inches, it is suggested that hardwood planks of the same size as the ties be used and spiked firmly to

the ties. Holes for the track spikes should be bored in the planks to prevent splitting. The planks should be used until a regular track shim of less than two inches can be used.

After the spot on the low rail has been smoothed out, the next step is to bring the high rail up to proper elevation. Here again, hardwood planks fastened to the ties, should be used until a regular track shim of one inch can be used.

Spikes should be driven through the holes provided in the shims. Long shim spikes should be used so that they will penetrate into the track ties.

Well-placed braces should be used on each shimmed tie and, in addition, standard gage rods should be used to keep the track from spreading. It has been found that 7-in by 111/2-in tie plates make good braces. They can be used by placing one end of the plate against the underside of the rail ball and the other end on the tie and firmly spiking it.

In shimming any spot of track, the track level and the track gage should always be used.

After the track has been shimmed, close inspection should be made to be sure that all shims are bearing evenly, and that the gage of the track is not being impaired. Also frequent inspections should be made when frost is melting and any adjustment in the shims should be made.

As soon as all frost has left the heaved spot, the shims should be removed and the track in that area restored to its original surface by surfacing and lining operations.

Do not adze

By C. C. THOMPSON Assistant Superintendent Maintenance & Engineering Great Northern Minot, N. D.

Where frost has severely heaved a spot on the low rail of a curve, the first thing to do is cover the location with a slow order until the condition can be corrected. This can be done by

(Continued on page 72)

NEW QUESTIONS to be answered in June

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly

DEADLINE: April 29

- 1. When camp cars or trailers are set out in a town, who is responsible for maintaining order and discipline among the men? What measures can be taken to insure proper conduct? For keeping the cars in good housekeeping condition? Explain.
- 2. With your present labor agreements, can you hire local plumbers, glaziers, heating contractors, carpen-

ters or masons to repair toilets, windows, doors, furnaces and concrete, instead of sending an entire crew to do the job? If so, how is the work and payments arranged? If not, what is done in such instances? Explain.

- 3. How much can track spikes be throat cut and still be suitable as line spikes without affecting track gage? To what extent can such spikes be used for hold-down fastenings? Explain.
- 4. What type of expansion bearing is the most suitable for use under long steel-span bridges? Why? What maintenance is required and what frequency of attention is necessary to keep it continuously effective? Explain.

• 5. To what extent can tie-renewal and surfacing equipment be used for the maintenance of yard tracks? Should this work be placed on a cycle basis? Does the size of the yard and traffic density make a difference? Explain.

Send answers to:

What's the Answer Editor Railway Track & Structures 79 West Monroe Street Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in. IN TRACK MAINTENANCE ...

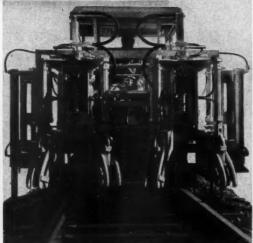
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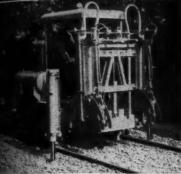
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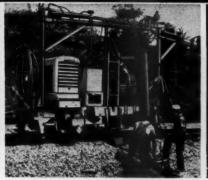
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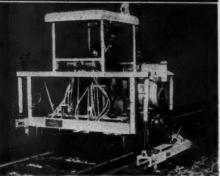
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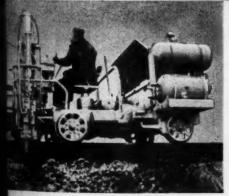
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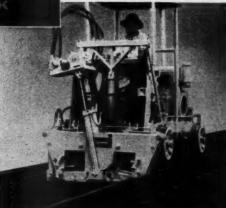
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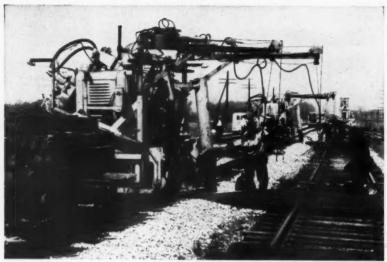


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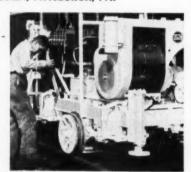
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What's the answer? (cont'd)

(Continued from page 69) shimming run-offs in each direction from the heaved hump, using the various sizes of shims down to ½ in. in thickness. It will then be necessary to shim the high rail to maintain the proper elevation. Tie plates should be used on all shims where possible. Wood braces, 14-in long, should be used on each tie and a gage rod in every third crib where the track is shimmed one inch or more.

Adzing of expensive creosoted ties should not be done unless necessary.

Summer shimming can be done on short sharp spots. By this method the ties on the heaved spot are lowered when the ground is not frozen and shims are placed between the tie and rail. Then, when heaving occurs in winter, the shims can be removed until the frost is out.

Another measure we are experimenting with is the digging of post holes about three feet apart in every third crib to the depth of the frost line and filling them with salt in the summer or fall. It is our opinion this will eliminate heaving in a spot for three years or more.

Since the beginning of railroading in this north country, heaved track has been an unending winter problem. As everyone knows, moisture in the roadbed causes heaving. Naturally we, in this country, are continually trying to correct or prevent uneven heaving.

Drainage is of most importance since a dry roadbed does not heave. In cuts where heaving is bad we have effected a cure by digging a ditch, 3 to 5 ft deep at the end of the ties, placing clay tile in it and backfilling with porous material. At other places an open, deep ditch, two or more feet outside of the ballast toe, has proved effective. In each instance the ditches drain out at the end of the cut.

Where there are water pockets in fills, it is necessary to dig down to tap the water pocket, backfilling with porous material and sometimes using a length or two of corrugated pipe. In some of our worst spots we have taken out sections of fill and backfilled with gravel or sand.

We have eliminated considerable surface heaving in our reballasted territory by the sledding or cribbing method, then surfacing on 6 in of crushed rock.

(More on page 74)



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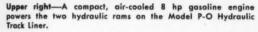
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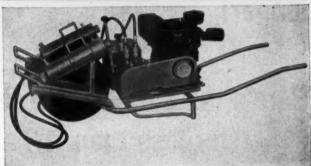


Upper left—The double flanged track rollers on the Model P-O-A adjust to any height and weight of rail. Set-off wheels optional.

Lower right—Mounted on this wheelbarrow-type frame, the Model P-O is easily transported or moved into position by one man.

Lower left—The control valve is mounted on the cylinder of the Model S-P Hydraulic Spot Liner for quick, efficient one-man operation.





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What's the answer? (cont'd)

Size up the situation

By G. K. LAMPHIER Division Roadmaster Northern Pacific Fargo, N. D.

The freezing of water in the roadbed frequently causes frost heaving at irregular intervals. In some cases the hump or frost heave will effect only one rail. If this condition exists on the low rail of a curve, it introduces a serious menace to the safety of trains. Soils containing a large amount of clay or fine silt are the ones which cause the most frost disturbance to the track, as these soils have a greater tendency to hold water.

The cost of maintaining shimmed track is considerable. Repeated spiking and adzing of ties reduces their service life. At no time should ties be adzed to lower a portion of heaved track, as this not only reduces their life but also weakens them to the point where they are likely to break after a small amount of traffic has gone over them.

In shimming track, the first step is to size up the situation for determining the extent of the shimming required. It is very seldom that both sides will heave the same amount. The insertion of shims must be done as carefully as when making run-offs for trackraising operations. Changes in temperature cause changes in the amount of heaving so that heaved spots require an unusual amount of attention by the track forces.

If heaved track cannot be kept in good line and surface, extra precautions for safety should be taken by placing slow orders on the portion of track involved.

When placing shims, they should be placed square with the rail with the holes lined up with the holes in the tie plates. They should be placed between the tie and tie plate and not between the plate and the base of the rail.

We use shims from ½ in thick to and including 2 in. However, for track requiring higher shims we use 2-in planks with the shims on top of them. For track requiring raises of ½ in or more, we use 4-in planks and shims. The planks used are the same width as the tie, and the same length whenever possible. When conditions are such that planks the same length

as the ties cannot be used, lengths three feet long are placed with their outer ends even with the outside of the ties. All planks are nailed to the tie with four or more 8-in spikes each. The planks are bored with ½-in or %-in holes, before spiking the rails and shim braces, to eliminate splitting.

On curves the rails are braced every second tie and on tangents they are braced every third tie. Either 12-in or 14-in wood rail braces are used, depending on the height of shimming.

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In addition to rail braces, spread rods are used. In signal territory, insulated spread rods must be used so as not to short out the signal circuit. For track on curves shimmed 1 to 2 in, we use four spread rods to each panel of track. For track shimmed more than 2 in, six spread rods are applied to each panel of track. However, for tangent track shimmed 1½ in or more, only four spread rods are used for each panel. It is important that whenever rails are raised on shims, shimming spikes or long cut spikes shall also be used.

Make run-off carefully

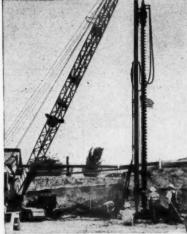
By L. D. ROCHE Roadmaster Canadian National Melfort, Sask.

The necessity for the use of shims is an indication of poor drainage or poor ballast under the heaved ties. This condition should be remedied as quickly as possible. However, when frost action makes shimming necessary it must always be done on the top of the ties.

When heaving occurs the track must be brought to surface by shimming the adjoining low ties on each side of the high spot. If the heave occurs on one rail only, the opposite rail must also be shimmed to maintain proper level. Frost will very often heave the track out of line. When this occurs the track must be spike-lined over the heaved spot to conform with the general line.

In no case must ties be adzed or otherwise cut to lower the heave.

When a heave occurs on the low rail of a curve the adjoining low ties must be shimmed each side of the heave and run out a sufficient distance to assure uniform riding over the heaved spot and to prevent the jarring of equipment and sudden twisting of trucks. This run-off must be gradu-



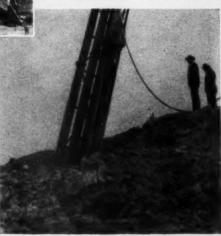
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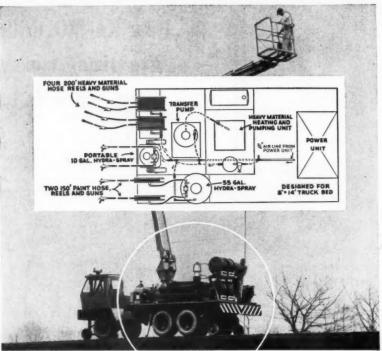
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What's the answer? (cont'd)

ated in a similar manner to curve easements, based on the permissable speed of trains and degree of curve.

The high rail of the curve must then be shimmed to bring the curve up to uniformity of surface and elevation. Good line must be maintained throughout, even if it is necessary to spike-line the heave.

Care should be taken to see that the surface of the ties, shims and rail braces are free of snow and ice before shims and braces are placed. Uneven untreated ties should be adzed to give the shims an even bearing throughout.

Shims must be of a uniform thickness throughout and not wedge shaped.

When shimming, it is desirable to use one shim of the required thickness. Where it is necessary to use two shims, the longest shim should be placed on the bottom. Where two or more short shims are used it is desirable to place the thickest shim on

Tie plates with shallow rib bottoms may be placed on top of shims. Tie plates with deep ribs on their bases should not be used as they will cut in under heavy traffic and cause low spots in the shimmed area as well as damage to the shim.

Spiking must be done in accordance with the standard plans of the railroad concerned. Shimming spikes must be used of the length required to give at least the same penetration into the tie as the standard track spike would normally give on unshimmed track.

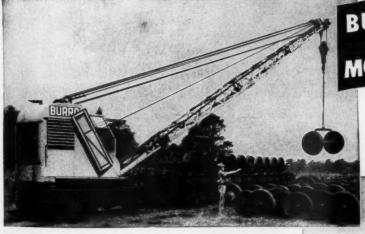
Rail braces must be applied in pairs one on each end of the same tie. The number of braces per rail will depend on the thickness of the shims and the degree of the curve.

Shims 3/4 in or thicker must be braced. Shims 2 ft or more in length must also be spiked to the tie in addition to the spikes holding the rails.

As the heaving usually continues for a period of time, it is necessary to re-shim as the hump comes up. The run-off will have to be extended as the heaving progresses.

As the frost leaves the grade and the heave goes down, the shims must be reduced accordingly until the track surface is back to normal. This is very important, because if it is not done the spot that was originally a heave will "hang." This could cause a broken or bent rail, or the battering by traf-

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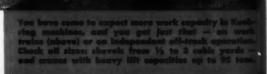
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Consider what the high-speed mobility and extra capacity of this Koehring 205 truck crane can mean on your scattered maintenance, construction, material-handling work — out along the line, around shops, in yards, etc. It drives 30, 40 miles, or more, in less than an hour's time. Travel is unrestricted — overall width is only 8 feet. Axle load distribution meets highway regulations in most areas, even when carrying 25-foot boom over the steering end.

With this mobile crane you're equipped to lift any load up to 15 tons (based on conservative 85% rating). It also handles ½ to ¾-yard clamshell bucket—does stockpiling, loads and unloads coal, chemicals, other bulk materials. Readily converts to dragline, pile driver, ½-yard shovel or hoe. To suit your working conditions, this Koehring 205 is available on a choice of truck, Cruiser®, crawler mounting—or self-propelled rail car. See Koehring distributor soon or send for more information.

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KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis

fic would work the ballast under the ties and create a high spot. Then when the shims are removed this spot would have to be dug down to obtain a uniform curve once more.

Surfacing track over bridge waterproofing

When tamping track out of face, what measures can be taken to prevent damage either to waterproofing membrane or timber deck while working on ballasted-deck structures? Explain.

Shortens tamper stroke

By G. T. SUMMITT Roadmaster St. Louis Southwestern Malden, Mo.

Since the question covers two subjects or phases I will attempt the waterproofing part first. The only such structures that I supervise of this nature are the concrete-arch approaches to the Mississippi River bridge at Thebes, Ill. These arch spans were waterproofed about 10 years ago. We do not do any out-of-face surfacing over these structures as the grade has to be maintained at a fixed level to fit the steel spans. Hence, necessary maintenance is spot work and is accomplished with hand tools which do not penetrate to the degree which disturbs the waterproofing.

All our other ballasted-deck structures are of timber construction. We do not waterproof them but rather expect and get drainage through the ballast and through the deck of the structure. We have a heavy-tonnage railroad and have some trouble getting stabilization on these structures. We use from 6 to 8 in of crushed stone as a cushion between the ties and deck. We prefer 6 in if we can get it to set up and hold. But there are times when we experience difficulty in getting this condition and have to add another 2 in of ballast of a lighter grade to get the desired results.

In out-of-face tamping or rehabili-

Whatever your brush problem



Line?



Roadside?



Right-of-way?

WEEDONE can solve it!

With the right background—Chemical control of weeds and brush has developed along established lines of procedures and practices. Amchem initially pioneered the major advances in the field, has originated many of today's accepted procedures and products for efficient, economical weed and brush control. Your problems are in experienced hands when you hand them to Amchem!

With the right approach—Amchem's corps of weed and brush specialists are basically application specialists. Combining comprehensive theoretical and practical experience they are able to offer all industry a realistic approach to any weed or brush problem. These specialists have developed a variety of efficient weed and brush eradication programs over thousands of miles of line, roadside and right-of-way areas once choked and inoperable due to infestation.

With the right product—Amchem's tremendously diversified product line is your assurance that the right weed and brush killer is available and will be utilized for your specific problem. Weedone Brush Killers, for example, have been used in the field for years and proven eminently successful in eliminating weeds and brush wherever they are a problem. Why not bring your problems to Amchem?

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CTURES



Save time and expense on right-of-way maintenance

handle scattered clean-up with 1-man D 'Pull*

NOW much of the load-haul-andspread operations on your right-of-way maintenance can be a one-man, onemachine operation—with the LeTourneau-Westinghouse D Tournapull® Handyman. This self-propelled, rubber-tired scraper isn't tied to rails. 138 hp, 9-yd "D" can be push-loaded, or will self-load up to about 75% of capacity. It travels shortest route to work—via right-of-way, highway, or cross-country—at speeds to 29.5 mph.

Once the 'Pull operator has his orders, he's on his own — doesn't have to wait around for a crew, work train, or dispatcher orders. Nor does he have to wait for main line clearance. He goes directly to his work, at roading speeds to 29.5 mph... gets into action as soon as he arrives!

Tires float over obstacles

Low-pressure tires of D 'Pull provide a smooth-rolling surface for travel. Yet, tire lugs bite in deep when pulling power is needed. These 5'-high, 1½'-wide pneumatics flex over rails, ties, and other obstacles with a cushioning action ... roll across tracks or over switches without causing or taking damage. For close work in confined quarters—a common situation on right-of-way embankments—"D" has high maneuverability. This L-W Handyman turns 180° in 24'8''... eases through narrow 8' cuts... travels via highway in all 48 states without permit. Electric controls are quick and positive.

Interchange hauled work units

A dozer blade is available for the D 'Pull. The hauled scraper can also be interchanged with a Rear-Dump body behind the same prime-mover, for hauling shovel-loaded material. Or with a lift-and-carry crane, with an arch suitable for hauling rails, poles — equipped with 61,500-lb-pull electric winch. Also available are interchangeable flatbed and side-dump haulers.

Compare with present methods

Get all the facts on the versatile. mobile 143 hp Tournapull now. Compare its work and travel performance... its manpower requirements... with whatever combination of men and machinery you may be using at present. Write for complete specifications on the versatile "D".

*Trademark DP-1832-RR-2/3

LETOURNEAU-WESTINGHOUSE COMPANY



Railroad Sales Division
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit



What's the answer? (cont'd)

tation programs we try not to disturb this ballast section. All of our heavy equipment or multi-tampers are set to rearrange the ballast well below the old tie bed, to a depth of 5 or 6 in. This can be accomplished by setting the machine heads. In this manner we try to keep the ballast from sealing under the ties which blocks drainage and causes the track to pump.

We can rearrange the ballast to the depth mentioned above to overcome this sealing action on our dump track. But our ballasted-deck structures now afford good drainage and, because we want to maintain them with the minimum of ballast to prevent overloading, we work the track over these structures differently from the dump track.

If the structure is long enough to warrant the change, we reset the stroke of the tampers to work only far enough below the bottom of the tie to fill the cavity to the desired raise. This is done without disturbing the old ballast. On short bridges the operators control the stroke of the machine to the extent that we get the same results.

In our type of maintenance we do not stir the ballast on ballasted-deck structures to the extent that we work close to the wood structure. Thus we have no problem of damage to the timber deck of the bridge.

What to do about brooming pile

When driving a pile, what are the indications that the pile is brooming? Should driving be stopped? If not, what should be done? Explain.

Prepare pile beforehand

By B&B SUPERVISOR

Brooming of piling usually occurs in hard compact sandstone, caliche, and in sand, gravel and boulder foundations. In general, the only sure indication that a pile is brooming is the spring or bounce of the piling when



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Here's <u>rugged</u>, <u>care-free</u> power for mechanized M/W operations

THE HUSKY 56-HP MODEL VR4D WISCONSIN Air-Cooled ENGINE!

Here's the trouble-free drive and muscle your mechanized M/W machines need to pay their way — to stay in ready-to-use condition all year long.

The rugged 56-hp VR4D meets the toughest service demands with power to spare. Its tremendous load-lugging power eases the engine through sudden shock loads without stalling or stopping.

The Model VR4D packs the same power in a smaller and up to ½ lighter engine than its water-cooled counter-part. You don't have to worry about dry-ups and freeze-ups, water and anti-freeze, radiators, fan belts, hose lines, etc. And you can depend on fast starts and steady power whether the mercury plummets to below zero or sky-rockets to a stifling 140°F!

To keep your big mechanized M/W equipment working, make sure it's powered by the Wisconsin VR4D! Write for Bulletin S-207—or get Bulletin S-249 which covers the entire Wisconsin line of engines—4-cycle single-, two-, and V-type four-cylinder models from 3 to 56 hp. All are available with electric starting and your choice of fuel system. Address Dept. R-20.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines

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solves your on-the-job thirst problems



By strategically placing IGLOO Water Coolers about the job (one for every 6 or 8 men) you will have less "watering time" and more work. IGLOO's built-in cleanliness pays off in employee relations, too.

When you order water coolers, specify IGLOO because:

- · It's been proven in use-thousands of times
- It's PERMALINED and has easy-to-clean, round inside bottom
- · It's corrugated for greater strength
- · Its recessed spigot won't be knocked off

IGLOO the world's No. 1 Water Cooler is available in 23 sizes and models with one exactly for your job.





JOUBLE-U Rail Ancho Louis schuff Railway Supply Co.

the hammer strikes the piling. It will be noted that the pile will spring back to almost the exact elevation as before the hammer blow.

In general, formations in which it is expected that piling might broom under driving are known from former experience. If not, these locations can be determined by test pits or preboring to obtain data on ground formations.

The proper preparation of the pile before driving will eliminate much pile brooming. If treated, the bottom end of the pile is cut off from 18 in to 24 in to obtain good solid material. Also, it is a material aid to driving if the other end is properly headed for the hammer. First, the pile should be chamfered and rounded to fit the hood of the hammer. Second, the top end of pile should be cut off from 12 in to 18 in before heading to obtain good solid material for driving.

At locations where either there are indications or it is known that hard formations will be encountered in driving, the piling should be pointed after cutting off sufficient pile to obtain solid material. The pile point should be shaped to a 4-in square or 5-in round, to suit the requirements of the individual as some prefer the square point, others the round. In any event where brooming is anticipated, the piles should be pointed. Should the pile then broom, it will reveal the brooming condition much sooner than if the piling were left unpointed.

If the above information is followed, it will eliminate most brooming of piling. Otherwise there is not much that can be done except to use steel points. These are costly and not much more effective than properly preparing the pile before driving.

Listen to hammer sound

By C. E. PHELPS **B&B** Supervisor A&WP, W of A, Ga. Decatur, Ga.

An experienced pile-driving foreman can tell by the action and sound of the hammer, as well as by the movement of the pile, if it is brooming. In most cases I can tell by the action and sound of a steam hammer whether the pile is brooming on timber, rock or gravel.

(Continued on page 82A)

TROUBLE AHEAD

DRIFT A-DRIFT



...and OSMOSE INSPECTION Spotted it in Time

The area surrounding drift pins and bolt holes is only one of the many possible decay spots which are hazards to the safety and service of timber bridges and trestles — and which can lead to costly replacements. And there's one best way to solve all these problems — OSMOSE Bridge

Not only do you get thorough, expert examination and evaluation, from groundline of pilings to caps and stringers, but effective, in-place treatment that can double the expected service life of your wooden structures.

Inspection and Treatment!

It will pay you in all ways to find out about the exclusive Osmose method. Find out, also, how amazingly moderate is the cost of keeping your older bridges in place, safe and sound. At no obligation, write: Bridge Inspection and Treatment Division, Osmose Wood Preserving Co. of America, Inc., 989 Ellicott Street, Buffalo 9, New York.



What's the answer? (cont'd)

If the pile has 17 to 20 ft of penetration before it starts to broom, I would stop the driving and make preparations for capping the bent. A pile which drives hard enough to broom and with 17 to 20 ft of skin friction will carry the required load.

If a pile starts to broom at a depth of less than 17 ft, it should be pulled. A steel point then should be applied or an earth auger used.

Of course, where a pile has to be driven to a certain depth because of excavating later and has started to broom, other methods must be used. Perhaps a steel point will have to be applied, or an earth auger used, or the jetting method employed.

Pile will bounce

By R. DOWNARD Supervisor B&B Illinois Central Paducah, Ky.

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When driving a timber pile, an indication that a pile is brooming cannot be definitely determined until the nature of the resisting material is known. This can be done by sounding with a steel bar, boring a test hole or core drilling. Several substances and materials will offer the same resistance to driving as the solids which are responsible for brooming. These include old timber grillage, compact and semifluid quick-sand and, in some instances, stratified rock or soft shale.

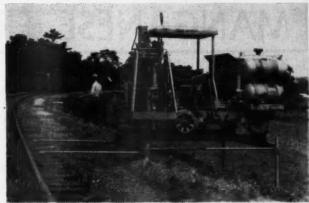
In such driving the pile will respond by settling perhaps an eighth of an inch or less per blow, then rebounding about one half of the amount of settlement. This will continue until the obstruction is driven through or is displaced. Normal settlement is then resumed until the pile has been driven to the penetration required or to the bearing value required.

Positive indications that the pile is brooming, when it is known that the material upon which the pile is resting is impenetrable, is the bouncing action of the pile as driving is continued. Settlement from each blow of the hammer is practically nullified by the return bounce caused by the broomed portion of the point. If driving is continued the rebound will increase in proportion to the size of the broomed portion of the pile.

(Continued on page 82B)

TPC SET-OFFS

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Set-Offs for ALL Maintenance of way Machines

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RAILWAY TRACK and STRUCTURES

MARCH, 1960

82A

A NEW KIND OF MANGANESE FROG

It hardens under impact ... but won't "creep" into flangeways!



AT LAST—The unique properties of Manganese Steel are being fully utilized in Trackwork! Manganese steel is tougher than any known steel, because it hardens as it wears.

Now . . . patented corrugations keep flangeways clean of overflow metal.

Little or no grinding is needed.

Result: you reduce track maintenance and for the first time you get all of the benefits inherent in manganese steel. Why not contact us now for more details?

* U. S. and Canadian patents applied for.

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What's the answer? (cont'd)

If soundings of the obstructing stratum can not be made for some reason or other, the pile should be pulled in order to examine the point, unless the pentration is too great to permit this. If brooming is in evidence, the pile, should be cut and redriven to the point of obstruction. After a few blows to set the pile solidly, the driving should be discontinued.

Driving should be stopped immediately when a hard or impenetrable stratum is encountered. To continue would undoubtedly cause brooming which would result in a very unsatisfactory condition. Bents supported in broomed piles have a tendency to churn under traffic and makes line and surface difficult to maintain.

Advice on a career in RR maintenance

If a bright young man were to ask your advice about whether a not he should adopt railroad maintenance-of-way work as a career, what would you tell him? Explain the reason for you opinion.

Not for years has a question in the columns evoked the interest this on has. Replies were received from man section foremen and supervisory of ficers. Because of space limitation only a portion of the replies are published in this issue. The remainder will be printed next month. —Editor

What are his characteristics?

By E. L. ANDERSON Assistant to Vice President - Operations (Ret.) St. Louis-San Francisco

Springfield, Mo.

In formulating an answer to the proposition it should be determined the young man has sufficient education, training and ability to permit his to progress through the various grade in the maintenance-of-way department, providing he puts forth sufficient effort. It is also assumed that

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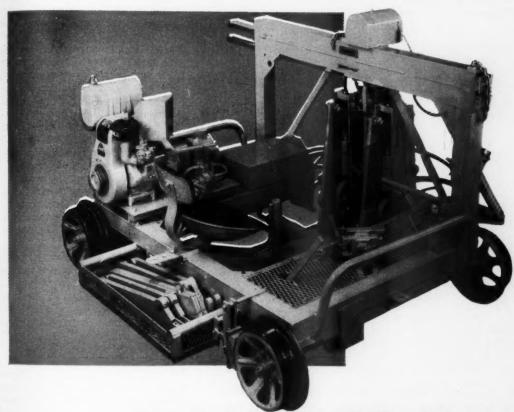
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STRUCTU

"Anchor Fast" ANCHOR APPLICATOR



For applying <u>ALL TYPES</u> of drive-on or tool applied hang-on anchors

The only machine, of its kind, in the field. The "Anchor-Fast" is hydraulically controlled and self-propelled. Maximum speed 15 mph. Unit is powered by a hydraulic jack cylinder for "off track" movement or can be revolved 180° for work on opposite rail.

CONSTRUCTION AND OPERATION FEATURES

- Smooth hydraulic pressure with adjustable stops, prevents over driving.
- Positive anchor-to-tie application.
- Machine can be used for either single or box anchoring.
- Powered by a 9.2 hp gas engine with clutch and reduction gear.
- Size of unit-95" x 75" x 56". Wgt. 2300 lbs.



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RAILWAY TRACK and STRUCTURES

MARCH, 1960

83

would be possible for him to pass from a supervisory position in the maintenance-of-way department to those of higher grade in operation and executive positions, should his energy and ability warrant.

With the above assumptions, positive or negative advice would then be given only after a complete discussion with the individual for the determination of his character and general concepts, providing they were not previously known.

Advice would be predicated on the following:

(1) His temperment should be such that he can work with people without unjustly criticizing their failures. Can he take constructive criticism and profit thereby? Would he feel frustrated should a suggestion of his not be accepted? He should be positive on all of these.

(2) His personal characteristics should indicate that he can lead, that

he can make up his mind and that, once a course has been decided upon, he will pursue it with diligence and intent. He should be charitable but firm, and at all times have an open and inquiring mind.

(3) His education should be sufficient to enable him to analyze thoroughly and he should have the ability to acquire additional knowledge as the necessity arises. A complete engineering education might assist him in acquiring higher positions more quickly, but would not be necessary with present-day training advan-

tages available.

(4) Has he any definite plans for his future? Does he expect promotion with regularity or promotion as his own individual efforts warrant? Would he draw satisfaction from accomplishment and a job well done rather than expecting material reward for each particular effort? Would he be resourceful in planning an opention and then meeting unexpected situations arising during the progress of the operation? Does he look forward with zest to the maintenance-of-way type of work or does he merely consider it a way of providing for his material wants?

If all of the four above statements and qualifications were apparently met satisfactorily by the young man, I would then advise him to enter maintenance-of-way work unless:

(A) If he were more concerned about fringe benefits and security features than about accomplishments in day-to-day work.

(B) If his family situation was such that he was under constant har assment about his lack of attention to his family, rather than devotion to his job.

If either or both of these exceptions were evident, I would advise the young man to go seek employment where security is paramount and reglarity of service only is required. have known of many young men who meet the four requirements, but wer too interested in exception (A) be successful in maintenance-of-way work. Likewise, I have known a number of cases where a young man me the four requirements successfully and was not effected by exception (A) but was involved as outlined in excep tion (B), finally cancelling out of what otherwise might have been 1 brilliant career.

The above may seem to be a slot





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Bucket capacity, 2 cu. yd.; bucket reach, 50% in.
(# 7 ft. dump height); over-all width (bucket),
93½ in.; wheelbase, 88 in.; speeds, forward (4),
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with diesel engine, 20,780 lb. — with gasoline engine, 20,440 lb.

MIGH LIFT, extra-long reach and safety! Note how bucket lift arms are completely in front of operator's area. This gives him new freedom of movement and greater all-round visibility. Other safety features: wide steps for safe and easy access from either side. Plus wide fenders that provide a handy engine checking platform as well as protection for operator from rocks and mid.

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...the Cat wheel-type Traxcavator

... the first of a New Wheel Loader Line



DESIGNED FOR ACTION, controls provide instant, finger-tip shifting...a full range of work and travel speeds with reverse speeds 25% faster than forward speeds. Travel Range gives 2-wheel drive for roading... Work Range automatically puts power to all 4 wheels. Other action features; conveniently located machine and bucket controls... forward-reverse lever on the steering column... both bucket control levers with kick-out devices. Lift control releases at dumping height — tilt control positions bucket for digging.



DESIGNED FOR PRECISE CONTROL, the No. 944 brake system is outstanding. The left brake neutralizes the transmission as it stops the machine to provide superior loading action. The right brake leaves the transmission engaged for full control when creeping, etc.



VERSATILE IS THE WORD for the Cat No. 944 Traxcavator, which is offered with a full line of attachments and accessories to multiply its usefulness to you on any job. Available are forks, cab (shown here) and special buckets, including the exclusive side dump bucket.

Here's the first of a completely new line of equipment... the Cat No. 944...rated at 2 cu. yd. capacity... that will soon include the No. 922 $(1\frac{1}{4}$ cu. yd. bucket) and the No. 966 $(2\frac{3}{4}$ cu. yd. bucket).

Watch for these new machines with the bold new design... they're ready to bring new standards to wheel loader operation. Take a look at the big new features that make this the easiest and fastest wheel loader to operate. Every feature is designed for efficient work. Plenty of horsepower... finger-tip steering... smooth, fast bucket action... outstanding operator comfort and safety.

Choose from two great new engines...the compact 4-cylinder Cat D330 Diesel Engine, turbocharged for maximum efficiency...or the 6-cylinder gasoline engine. Both are 105* HP units. Whatever your requirements, there's

a No. 944 powered to meet your needs. Get the complete facts on the No. 944. See your Caterpillar Dealer the week of March 14. See for yourself how the new design pays off on your loader jobs!

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*For comparative purposes, the maximum rating of the Caterpillar D330 Diesel Engine used in the No. 944 is 135 horsepower.

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TRUCTUE

NOW... Plow, Remove Worn Ties, Sled Ballast and Align a MILE of Track a Day with MANNIX AUTO-TRACK



Plowing and removing worn ties is done at the head end of the MANNIX AUTO-TRACK. Worn ties are automatically ejected by conveyor.

Aligning unit at rear of MANNIX AUTO-TRACK keeps track in rough alignment behind plow, accurate alignment behind sled.





Sled replaces plow to place ballast under ties. This track was raised five inches.

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What's the answer? (cont'd)

process in determining how to advise a young man about a career in maintenance-of-way work. However, in a question-and-answer session with a young man, determination of such can ordinarily be made rather quickly by anyone experienced in such interviews.

Health is important

By W. R. BJORKLUND District Engineer Northern Pacific St. Paul, Minn.

The most fundamental consideration should be his health. This is important as any work in the M/W department requires an excellent physical condition. He should be willing to work hard and out of doors under all weather conditions. He should have a thorough physical examination to determine that his health is satisfactory to withstand the rigors of working outdoors and a thorough eye examination to determine that he has mobjectionable difficulties in that regard.

The question does not indicate to extent of the educational background of this bright young man. It would be desirable if the individual had at least a few years of engineering training. However, if that is not possible to should be willing to augment his high school training with a good series of correspondence courses relating to track work and engineering.

The M/W department is becoming increasingly mechanized. Therefore, the individual should have a basic interest in mechanical equipment

His duties will require him to be away from home and will entail periodic changes to his headquarters. Accordingly, he should be willing to travel and relocate his family when required.

Lastly, there is the matter of woding with people, inasmuch as the M/W department comes in contact with a departments of the railway as well a with its officers, supervisors and laboring men. He should have the basiqualifications for handling people, is cluding good personality, honesty, is tegrity, etc.

To summarize, if the young maner joys good health, is willing to lean is interested in mechanical equipment Ripping out railroad crossings every three years meant a \$912 expense - per crossing _to this mid-Atlantic railroad. That included removal of the old amiesite and ballast - replacing both with fresh material - plus necessary resurfacing and provisions for drainage. But it didn't count the annoyance to motorists every time a busy crossing was torn up. You can end all that with Rubber Railroad Crossings, the G.T. M. - Goodyear Technical Man - promised them. So a trial installation went in nearly 4 years ago. At last report, maintenance costs on this heavily-trafficked grade crossing have come to only \$12 a year - for patching approaches - with no additional repair needs in sight. And the almost \$300 saving per year has sold this line additional Rubber Railroad Crossings.







And this is a typical experience. More and more railroads and industrial firms - the country over are discovering how much the G.T.M.'s Rubber Railroad Crossings can save them - especially since Goodyear crossing pads are now also available for installations located on slight curves.

For full information on these longer lasting, smoother, quieter, virtually maintenance-free crossings, write Goodyear, Industrial Products Division, St. Marys, Ohio, Los Angeles 54, California, or Akron 16, Ohio.

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STRUCTUE

MARCH, 1960

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Three new air-cooled

KOHLER DIESEL ELECTRIC PLANTS

cut independent power costs

Compact, reliable, economical, these new air-cooled Kohler diesels offer a practical size range for lighting, maintenance tools and other independent power needs. Easy, all-weather starting. Lightweight, each with skid-mounted base for easy handling. Low-cost diesel fuel operation. Available with remote, push button or manual start. Other sizes to 100 KW, gasoline or diesel. Write for folder H-63.

KOHLER CO. Established 1873 KOHLER WIS.

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings • Electric Plants • Air cooled Engines • Precision Controls

What's the answer? (cont'd)

and likes to work with people, he should be in a position to take advantage of the many good opportunities available in the M/W departments of the railroads.

Not in the track department

By THOR MONROD Section Foreman Northern Pacific Billings, Mont.

I would most emphatically advise any bright young man not to adopt the track division of the maintenance-ofway department as a career for several reasons.

(1) The pay is very low. In fact, it is the lowest of any industry, and for sure in railroad service. The work is hard manual and physical labor (some mechanical devices have been introduced, but manual labor still exists). This labor is among the dirtiest obtainable.

To obtain proficiency and basic understanding, he must work as a track laborer, not for one, two or three

months, but for at least from one two years steady.

(2) Promotions are slow to the next rank of an assistant foreman of if lucky, to track foreman. Here again he will have to remain at least two years or more, so he can get the proper training in leading and carrying of different kinds of track work, in the safety of his laborers and in his responsibility towards his work and his railroad.

Again his pay is very little. The difference between his and his laboren pay is approximately \$15.00 to \$45.00 per month. Sometimes machine operators get more pay than the foreman.

Housing and living conditions, both as a laborer and a foreman, are so called bunk cars and other not-so sanitary quarters when out in the field. When in towns or cities, he will have to rent housing. If married, he would not be able to have his wife and family with him, because it would mean added expenses and places mental stress upon the man and his family.

(3) Promotion from foreman to higher ranks, such as track supervisor, or, if very lucky, to an assistant road-master or roadmaster, goes very slow. To obtain a promotion to roadmaster on the average railroad, the requirement nowadays is a college or university degree. This possibility for advancement from track foreman is a 1-to-100 chance, or possibly a 1-to-1000 chance. After being made a roadmaster, the chances are that he will remain in that position until retirement, although a privileged few



SAVES TIME! CUTS COST!

Here is the tool you need for premarking ties to be replaced. A tap of the porous applicator leaves a bright, durable, weather resistant mark. Paint can clamps into adjustable head of hammer permits marking from any angle. Complete with cap to prevent drying of applicator. Available in many colors.

TRY IT - ORDER TODAY OR WRITE:

THE NELSON COMPANY

Iron Mountain, Michigan (Box. 349) Montgomery, Alabama (Box 1892)

ENGINEERS WANTED

Need three railroad sales engineers to represent prominent maintenance of way equipment manufacturer. Territories open in southeast, southwest and western United States. Must have maintenance of way and especially track experience. Provide details on education and experience. Adequate salary commensurate with qualifications. All inquiries treated confidentially. Write Box 28, RAILWAY TRACK & STRUCTURES, 30 Church Street, New York 7, New York.

ENGINEER WANTED

Young track supervisor with engineering background or engineer with track background for Chicago area belt railroad. Unusual employee benefits. Central location. Wonderful future. Apply Box 26, RAILWAY TRACK & STRUCTURES, 79 West Monroe Street, Chicago 3, Illinois.



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new low-cost brush disposal method!

A new and highly effective method for complete brush control was seen by attentive maintenance of way officials at a recent demonstration near Chicago. International Danco heavy-duty rotary mowers mounted on IH tractors gave an eye-opening exhibition of tremendous cutting capacity, safety, and dependability. Heavy brush and sap-

M/W officials taking a close look at the extra-rugged 94inch International Danco rotary mower mounted on the 61 hp* F-460 tractor. The 45 hp* F-340 with 66-inch International Danco

mower is illustrated at top of page.

lings up to four inches in diameter were bowled over by IH tractor brawn and power. Heavy whirling blades in the center-mounted mower quickly shred brush for a total kill down to ground level. Center-mounting lowers the unit's center of gravity to permit safe mowing on steep side slopes. Superior mowing ability combines with built-in stamina to insure many seasons of top performance.

An IH dealer near you will gladly show you why International Danco mowers and IH tractor power are today's most dependable and safest buy in highcapacity mowing equipment, 58 to 94-inch cutting widths available. For dealer's name and specification sheets, write International Harvester Co., Dept. RTS-3, P. O. Box 7333, Chicago 80, Illinois.

* Maximum flywheel hp at standard sea level conditions



... Twine ... Industrial Tractors ... Motor Trucks ... Construction Equipo Office, Chicago 1, Illinois



Cut time cost on land-clearing and maintenance work with the

RUGGEDES



Here's how Covington Cutters save money on heavy work:

The Covington Cutter is engineered for heavy industrial work and not only out-performs but outlasts ordinary cutters. Massive, allwelded construction, an exclusive shielded flywheel and safety clutch are features that enable a Covington to take the toughest work in stride. So powerful it chews up anything a tractor can push over!



Rides over stumps and rocks without damage or slow-down!

. . . the heavy flywheel conveys unmatched ver to serrated cutting blades and is shielded to slide easily over obstacles.

For tractors and Jeeps with 3-point lift.

The savings on repairs and man-hours will quickly pay for a Covington! A quality product of the manufacturer of famous Covington Planters since 1912.



See your dealer or send for FREE LITERATURE

W. F. COVINGTON PLANTER CO., Inc. DOTHAN, ALABAMA

What's the answer? (cont'd)

will be advanced to an assistant trainmaster. In general, none of these minor positions are very highly paid. Also, there is very little possibility of being advanced from track laborer or track foreman to a position as a smaller official.

Biographical briefs (cont'd)

(Continued from page 10)

sequently he was promoted to assistant electrical supervisor in 1943, assistant office engineer in 1946, chief signal inspector in 1950 and signal supervisor in 1951. Mr. Eash was further promoted to signal engineer at Pittsburgh in 1955, the position he held at the time of his recent promotion.

Benoit J. Ethier, 30, who was recently promoted to assistant division engineer on the Canadian National at Cochrane, Ont. (RT&S, Nov., p. 10), was born at Larocque, Ont., and graduated from Sacred Heart College in 1951 with a Bachelor of Arts degree. In 1955 he received the degrees of Bachelor of Applied Science and Civil Engineer from the Ecole Polytechnique. He entered the service of the CNR in 1955 as a junior assistant engineer at Cochrane Two years later he was promoted to as sistant engineer there, the position he held at the time of his recent promotion.

Association News

Northwest Maintenance of Way Club

J. M. Budd, president of the Great Northern, will be the principal speaker at the next meeting of the club, which will be held on March 24 at Coleman's Cafe, 2239 Ford Parkway, St. Paul. He will talk on "The Future of Railroads."

American Wood Preservers Association

The annual meeting of the association will be held April 25-27 at the Statler Hilton Hotel, New York. One of the features of the program will be a symposium on laminated timbers.

Maintenance of Way Club of Chicago

The March meeting will be held on the 28th at the Hamilton Hotel, Chicago. The program will consist of a panel discussion of production tampers. The discussion will



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resist rust and corrosion.

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RAILROAD SPECIALTIES

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Lower First Cost— Lower Installed Cost

The new Reliance Rail Anchor, made by Eaton Manufacturing Company, is a one-piece, heat-treated, high-carbon, high-manganese spring steel anchor which grips the rail firmly, and provides holding power greater than the resistance of the tie in any type of ballast. Scientific streamlined design requiring less metal, results in lower first cost and effects important savings in transportation, storage, and handling. Due to this lower cost, two-way anchorage can be used with less increase in over-all anchor costs. The Reliance Rail Anchor is effective from the moment it is applied, and every anchor carries its equal share of the load at all times. This uniform anchorage prevents skewing of ties and bunching of ballast.

Send for Illustrated Literature



Quick, Easy Low-Cost Installation

- ★ Provides immediate, permanent anchorage
- No sharp projections, will not damage rail in case of derailment
- * Will not cut spikes
- * Equally efficient on new or worn rails
- ★ Can be applied with maul, sledge, or machine

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MOORE & STEELE CORPORATION

Owego, Tioga County, New York

Manufactured by Spring Perch Company, Lackawanna, New York, Subsidiary of Eaton Manufacturing Company

OVER 30 YEARS' EXPERIENCE IN THE DESIGN, DEVELOPMENT, AND MANUFACTURE OF RAIL ANCHORS

be moderated by W. E. Cornell, engineer of track, Nickel Plate. Panel members will consist of representatives from the different manufacturers of production tampers.

Supply Trade News

DEARBORN CHEMICAL COMPANY - This company has announced the opening of an Indiana-Michigan district office, with headquarters at Fort Wayne, Ind. T. J. Weisbruch has been appointed manager of the new district.

INTERNATIONAL HARVESTER COMPANY-Harry T. Phelps, supervisor of sales promotion, industrial equipment, at Chicago, has been promoted to industrial tractor and equipment sales representative, according to an announcement by R. W. Dibble, manager, farm equipment sales. In his new position, Mr. Phelps will work with the company's district offices throughout the United States in the promotion and sale of industrial tractors and equipment to national fleet accounts, railroads, airports, state governmental agencies, and other multiple users of this type of equipment. Mr. Phelps will also serve as liaison with the districts in the promotion and sale of modified industrial wheel tractors to manufacturers.

KOEHRING DIVISION-Paul A. McDonald has been appointed Western district man-



P. A. McDonald Koehring



ager, with headquarters at Danville, Cal. His territory includes California, Nevada, Utah and Arizona.

KWIK-MIX COMPANY - Walter Lay and Richard Henry have been promoted to sales engineering consultant and sales manager, respectively, of this company's Ka-Mo Tools Department. Mr. Lay will also aid in sales training, merchandising programs and new product development.

The Chesapeake Supply & Equipment Corp., Baltimore, Md., has been appointed distributor for Ka-Mo products in Maryland, Delaware, District of Columbia and the northern sections of Virginia and West Virginia. Branch offices of the company are located at Hyattville, Md., and Dover,

T. J. MOSS TIE COMPANY-D. B. Mabry, manager of lumber sales at St. Louis, Mo., has been elected vice president there. Mr. Mabry was born at Poplar Bluff, Mo., and joined the Moss organization in 1925. In 1935, after service at the company's treating plant at Columbus, Miss., he entered the sales force at St. Louis. He was promoted to manager of lumber sales in 1948.

NATIONAL CYLINDER GAS DIV., CHEMETRON CORP .- A new plant for butt-welding rails immediately upon their emergence from the rolling mill is to be constructed at Ensley, Ala., near the mill of the Tennessee Coal & Iron Division of the United States Steel Corporation, according to a joint announcement by the Division and the National Cylinder Gas Division of Chemetron Corporation. When the plant is in operation the railroads will be able to obtain welded rail "faster and more economically," said J. L. Adank, president of the National Cylinder Gas Division. Arthur V. Weibel, president of the Tennessee Coal & Iron Division, stated that the cooperative innovation will provide new, improved service for its railroad customers who desire rails in other than standard mil

The announcement states that standardlength rails will move from the rolling mill directly into the new plant where they will be welded into sections anywhere from 71 ft to 1/4 mile long. The welded rail will be shipped on flat cars or in gondolas to the points where they are to be installed. The plant will be served by the Birmingham Southern.

PORTLAND CEMENT ASSOCIATION-Seeger, Jr., sanitary engineer in the association's Conservation Bureau, has been promoted to manager of personnel training, succeeding Walter E. Kunze who has

9381



WRRS Electric Switch Lamps Reduce Switch Lighting Costs 50%

Here's Why Scores of Railroads are Standardizing on WRRS Electric Switch

- Heavy cast iron construction designed to last a lifetime
- Steady, clear light-400% brighter than oil lamp light
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WRRS Electric Switch Lamps are furnished in three sizes for operation with airdepolarized primary battery or with commercial current.



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problem! tunnel

Unique new motorized-scaffold unit gets to "inaccessible" jobs, then hydraulically expands into a complete scaffold system! Developed for B&O by Athey, Moto-Scaffold speeds up work in their extensive tunnel improvement and repair program.

Moto-Scaffold runs on rubber, follows rails on automatic guides. Not tied to track, it gets men and equipment in and out of tunnels at speeds up to 20 mph, forward or reverse! At the job site, four stabilizer jacks

hit the earth. Platform eases up hydraulically. From each side, platform extensions fold out...descend to any point for men to work tunnel sides. All controls are at operator's fingertips.

In! Up! Down! Out! Problem jobs go fast with Moto-Scaffold, a new dollar-saver in the Athey family of railroad equipment. Get the

full Athey story . . . write for Athey railroad literature today!









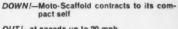
IN!-with men and equipment

UP!—platform rises, platform extensions fold out and descend to any point for worker convenience

OUT!-at speeds up to 20 mph

Othey PRODUCTS CORPORATION, 5631 WEST 65th STREET, CHICAGO 38, ILLINOIS

RAILWAY TRACK and STRUCTURES



MOTO-**SCAFFOLD**

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MARCH, 1960



Rail-Road Unit Installed on 1960 Ford Station Wagon

The Business Car" of the 1960's



For Economical, Trouble-Free "on-rail/off-rail" Transportation

In recent years, the necessity for frequent track inspection by executive personnel has skyrocketed on most railroads. Several factors including maintenance of way mechanization and reduced train service have brought about today's demand for a low-cost yet efficient rail-highway inspection vehicle.

Most of the nation's most-progressive railroads have adopted the Rail-Road Conversion Unit installed on station wagons, sedans and light trucks to help solve their inspection problems. This versatile unit permits safe—speedy operation over rail trackage . . . while serving as a highway vehicle when needed. Vehicles equipped with the Rail-Road provide direct access to precise inspection locations directly from headquarters, hotels, other tracks, etc.

No longer do your key personnel need to "kill time" waiting for less-frequently run trains as transportation.

The Rail-Road Conversion Unit offers the simplicity of compact design, trouble-free maintenance, plus easy single-action positioning or removal from the track. Years of rugged performance are built into the Rail-Road Conversion Unit.



Let us SHOW you how this equipment can save your company valuable Time and Money!

SANTA ANA, CALIF.

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CANADA: Sylvester Distributors Limited, Kent at Victoria, Lindsay, Ontario EXPORT: Electric Tamper Export Co., 205 W. Wacker Drive, Chicago 6, Illinois

Supply trade news (cont'd)





W. E. Kunze, Jr. PCA

PCA

been promoted to manager of the Structural and Railways Bureau. Mr. Kunze succeeds Alfred L. Purme who has been promoted to head of the newly formed Advanced Engineering Group at Chicago. The announcements were made by G. Donald Kennedy, president of the Association, who described the new group as a "highly specialized unit, bringing together unusual engineering talent for the development of basic engineering data." He stated that is purpose will be "to apply the most advanced engineering, mathematical and physical principles, and the most modern test data, to achievement of even more effcient use of concrete in all of its many applications.'

SIMMONS-BOARDMAN PUBLISHING COR-PORATION - The Railway Education by roau, Omaha, Neb., has been acquired by this company, publishers of Railway Track & Structures and other railway publications, according to an announcement by A. J. McGinnis, president of Simmons-Boardman. B. Charles Walters, supervisor of apprentice training of the Rock Island at Moline, Ill., has been appointed director of the Bureau, with headquarters at Omaha, effective March 1.

The Bureau publishes training materials, including textbooks, for use in apprenticeship programs in the mechanical and signal departments and for supervisory training Immediate plans call for the addition of courses covering maintenance of way and engineering and purchases and stores. Classroom courses range up to four years in length and supplement regular on-thejob training. At present the organization has training contracts with 15 Class I railroads.

The Bureau was founded in 1914 by Dexter C. Buell who died on January 21 at Omaha.

of the board of this company, has an nounced the formation of Tomper, Inc., 10 handle operations, including sales and service, in the United States, with headquarters at Danbury, Conn. Shirl A. Thompson has been appointed vice president charge of sales for the new company.

Obituary

O. DeG. Vanderbilt, Jr., chairman of the board of Taylor-Wharton Company and president of Weir Kilby Corporation, died on January 22 at his home at Cincinnati



MILLIONS SOLD · MILLIONS IN TRACK

M&S Rail Anchor Spring Take-Up is distributed over the entire anchor • provides strong gripping power on rails that are on the low side of rolling tolerance or reasonably worn • eliminates the need for shims.

M&S Rail Anchor Anti-Drive End prevents overdriving in normal applications • acts as stop against the fillet joining the rail base with the web.

M&S Rail Anchor has lasting holding power • good reapplication quality • bearing surface on top of rail reduces possibility of damage by a derailed wheel or dragging equipment • large bearing surface on tie gives extra pro-

tection against creeping • ideally suited for welded rails.

M&S Rail Anchor needs no special installation equipment • anchor can be installed or removed with sledge, maul or most mechanical applicators.

M&S Rail Anchors are tagged and bundled in groups of 25 for lower handling costs • easier distribution along the rails.

Complete details are available from the American Car and Foundry sales office near you. AMERICAN CAR AND FOUNDRY

Division of QCf Industries, Inc. 750 Third Avenue, N. Y. 17, N. Y.



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WITH A SCHRAMM 125 COMPRESSOR YOU SAVE \$1,685 AT THE START!

compare with other maintenance-of-way portables



price range other makes Lowest

Highest \$ 4,950 - \$ 6,405

Schramm prices ... \$ 4,720 - \$ 4,720 you save.....\$ 230 - \$ 1,685

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then you get Schramm operating savings





Save 15-50 % every year

FULL 125 CFM OF AIR

15% more power

PORTABILITY most compact job on the market

and you get Schramm maintenance savings

ON PARTS PRICES

ON PARTS HANDLING wearing parts 90%



interchangeable between engine + compressor

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savings with Schramm piston-type compressors in any size, the day you buy. Then you keep on saving with Schramm's full-rated air delivery. extra power, low maintenance, and fair play on parts prices. Check now. Complete line, for every railway maintenance need; gas or diesel, with hefty economies in every compressor size. Write today for full information to Schramm, Inc.



hramm AIR COMPRESSORS

Helps from Manufacturers

The following compilation of literature—including pamphlets and sheets—is offered free to railroad men by manufacturers to the re road industry. To receive the desired information, write direct to manufacturer.

TURRET DERRICK. A new 16-page booklet is available which describes and illustrates the Truco combination aerial lift, un versal derrick and earth digger. The booklet describes the feature of the machine, known as the Turret Derrick, including to scoping boom, two-man insulated fiber glass basket, turret de rick base, turret, folding link, hydraulic outriggers, winch and h draulic digger. A large number of photographs show the mach doing a variety of jobs. Specifications of the three models available able are given as well as capacity charts for each model. (Write: Truck Equipment Company, Dept. RTS, 3963 Walnut St., Denve

ELECTRIC PLANTS. A booklet is available which describe and illustrates the new series of Kohler air-cooled, diesel-por ered electric plants. The eight-page booklet points out the feature of the 2000, 5000 and 7500-watt plants. Also included are specified and 1500-watt plants. Also included are specified and and info fications for each model, lists of standard equipment and in mation on fuel consumption. The manufacturer states that the electric plants are engineered for the railroad, construction, marin and industrial markets. (Write: Kohler Company, Dept. RTS Kohler, Wis.)

CRANE-EXCAVATOR. The American 300 Series crawler crans excavator is described and illustrated in a 24-page catalog no available. The catalog, 730-CG-2, includes a number of a the-job photographs showing the various kinds of jobs the m chine can perform. The features of the machine are explained by the use of pictures, drawings and diagrams. The catalog also points out the interchangeability of the different types of from such as crane boom, dragline, clamshell, magnet, backhoe and pile driver. (Write: American Hoist & Derrick Co., Dept. RIS. 63 South Robert St., St. Paul 7, Minn.)

ROLLING DOORS. A 16-page maintenance and parts manual is available, which is intended as an aid in the ordering of m placement parts for Mahon rolling steel doors. The manual & scribes maintenance procedures, door adjustments, typical costruction features and contains information on ordering replace ment parts. All door components, as well as mechanical power operators, are illustrated by means of drawings and photographs. Each part is numbered for ease of identification and to give reference to the proper specification. (Write: The R. C. Mahon Company, Rolling Steel Door Division, Dept. RTS, Est 8-mile Road, Detroit 34, Mich.)

WOOD PRESERVATIVE. The use of pentachlorophenol 21 treatment for wood is described in a new eight-page booklet. The booklet lists the physical properties of technical grade pentachlor phenol and includes specifications of the two types of chlorophen available. The advantages of the material are given. Information is included on packaging and the application of the wood prese vative to specific kinds of materials, such as ties, lumber, plywood and poles for use in pole-type buildings. A list of approved soltions is given along with a brief reference to the appropriate Fe eral, AWPA or NWMA specifications. (Write: Reichhold Chemical icals, Inc., Dept. RTS, White Plains, N.Y.)

LIGHTWEIGHT CONCRETE. The use of Pozzolith for proving the quality and increasing the workability of lightweet concrete is described in a bulletin now available. Designa MBR-P-14, the 20-page bulletin describes 13 construction p ects in which the material was employed in the mixing of li weight concrete for columns, beams and floor slabs, multi-sto structures, thin-shell concrete and bridge decks. The advanta of using Pozzolith are listed. A large number of photograph are included to show the structures and the placing of cond (Write: The Master Builders Company, Dept. RTS, Cleveland)

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Kill more weeds...per mile...per dollar! with GENERAL CHEMICAL UROX® Weed Killer



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Liquid UROX can be shipped to you conveniently by rail in tank cars for spraying along right-of-ways. It kills all weeds fast, regardless of weather, usually wilts them back within 10 to 12 hours. Compare this fast action with other weed killers which take up to 2 weeks to kill!



Granular UROX is especially well suited for controlling weeds and brush in rail-road yards, on spurs, sidings, around storage depots and other railroad installations. Application can be made easily and quickly with ordinary mechanical or hand-operated spreaders.

That's right! With General Chemical's powerful acting UROX Weed Killer you can actually kill more weeds—stop 'em in your tracks faster, easier, for a longer time, and at lower cost than you ever thought possible. UROX is so effective just 1 application will wipe out weeds and brush for as long as 8 to 18 months! Results carry over, too! Because the effects of UROX are cumulative, herbicidal action can be continued year after year with small "booster" treatments.

Where deep-rooted brush and weed-trees are a problem, use General Chemical's new URAB* Weed Killer. URAB actually penetrates the soil to kill deep roots. Does what no other herbicide can! For outstanding railroad weed control—lower maintenance costs—include UROX and URAB Weed Killers in your maintenance program this season! Write today for free literature, or ask to have a representative call.



GENERAL CHEMICAL DIVISION 40 Rector Street, New York 6, N. Y.

RAILWAY TRACK and STRUCTURES

USE Q AND C STEP JOINTS FOR DEPENDABLE SERVICE



Q and C Compromise Joints are made of alloy electric cast steel, heat treated, to resist the impacts of heavy service and are designed with special reinforcement at the center where strength is most needed.

If the average allowance for top head wear on old rails is specified, we can provide the best possible surface to prevent batter on the rail ends and reduce maintenance costs.

Ask for Q and C Step Joints on your requisitions.

THE Q AND C CO.

59 E. Van Buren St. Chicago 5 90 West St. New York 6 611 Olive St. St. Louis 1

Our 72nd year in the development of worthwhile track appliances.

NOLAN TOOL AND SUPPLY CAR NOW STANDARD ON 35 RAILROADS



The Nolan Tool and Supply Car has proved itself a consistent profit-maker for 35 railroads operating big and small crews, through its ability to carry heavy loads of ties, rails, supplies, etc., easily and quickly!

Safely handles loads to 2000 lbs. All tubular high-carbon steel construction for trouble-free service. Car breaks conveniently in the center into two sections for easy handling and transportation. Each section can be used as a truck seat.

The deck is heavy mesh-expanded steel. Removable handle can be used at either end. Ball bearing cast steel wheels.

Platform Size 48" x 45" Height Above Rail 8" Weight 140 lbs. complete

Write for complete tool and supply car illustrated literature and prices. FREE complete catalog shows entire NOLAN railway supply line.

THE NOLAN COMPANY, 166 Pennsylvania St., Bowerston, Ohio

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